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Marshland and its Churches.

SITUATED in the north-western corner of Norfolk, between the rivers Ouse and Nene, Marshland, as its name implies, was at one time a great swamp, forming, in fact, a considerable part of the Wash, impassable at low tide, and one great expanse of water when the tide was full; in breadth about seven miles, and extending from Lynn southward as far as the Po or Pa dyke; westward including Wisbech and the neighbouring villages in Cambridgeshire.

The traveller in this district will probably at first be struck with the extreme flatness of the country (for it is a dead level), and also with its apparent baldness; but it improves on acquaintance, and it must be remembered that this is one of the richest grain districts in England, whilst the pasture for cattle is unrivalled, owing in great measure to the numerous dykes and ditches which intersect the land in every direction. The county is purely agricultural; and it is this which makes it so surprising that such splendid churches are to be found in almost every village, — often several within sight of each other. That much good work exists in King's Lynn is easily accounted for from the fact of its having been at one time,—as it is even now in a less degree,—a seaport of considerable importance, and its inhabitants a very wealthy class. Many traces of its former splendour are still in existence, and a short walk through the town will reveal much of interest. The streets wind about in most confusing fashion, and seem, as in so many old towns, to have been laid out without plan or reason. Curious courts and alleys, leading off from the main thoroughfares, excite curiosity, met sometimes by disappointment, but more often rewarded by the discovery of some quaintly picturesque brick gable, or perhaps of some old courtyard surrounded by a building which was at one time the abode of some wealthy merchant of two centuries back, but which is now divided into several small tenements, each with its own proprietor, who still takes a certain pride in his surroundings, and who will be only too happy to open his doors,—especially if assisted by that silver key which no traveller can long do without: it may be, wondering a little what there can be of special interest in his room, but nothing loth to do all in his power to oblige, saying, in the peculiar sing-song common to the Norfolk lower classes, and raising his voice at the end of the sentence,—"Coome in, sur, coome in; they do saay as thaat boarding, sur, agin the wall be woonderful oold"; directing our attention, at the same time, to some Jacobean oak panelling which has survived the changes from which the building has suffered. In response, however, to a feeler thrown out as to purchase, we are met by the answer, which clearly shows that the same thing has already been attempted by others,—"Noa, no-a, sur; I loikes the room woonderful well, and I beant agoin to part." With a sigh,—for the panelling is very good and in beautiful preservation,—and, after further examination, we take our departure, not without some feeling of relief that, at all events, even if we are not to be the fortunate possessors, nobody else is likely yet awhile to obtain it. One such courtyard as that above mentioned goes by the name of "Hampton Court," and from the roof of the arched entrance hangs suspended a cannon-ball, which the inhabitants tell us was pitched into the middle of the building during the siege by Cromwell, when the town stood out for King Charles.

First and foremost as objects of interest in Lynn are the two great churches, St. Margaret's, and its wonderful chapel-of-ease, St. Nicholas. St. Margaret's is the more important of the two, being the mother church. It is said to have been built by Herbert de Losinga, Bishop of Norwich (1091–1119). Portions of his buildings still remain in the west front, and are good specimens of Norman work. The nave was destroyed in 1741, owing to the falling of the spire of one of the western towers, but it was rebuilt in the style (?) of the period. The Early English bases of the former nave-piers have recently been brought to light, and show a central column with four clustered and detached shafts. The choir is Early English, and very beautiful, the caps being richly carved with foliage, each one varying in design. In this church is the famous "peacock" brass (1374), now removed to a safe position in the south-west tower. This commemorates Robert Braundce and his two wives. They lie under canopies with eight mourners, in male and female costume, at the sides; at their feet a peacock feast is portrayed. King Edward III. is seated with his courtiers at table, and a peacock is being brought in; on one side a knight is reaching forward for the dish, with one leg thrown across the table in his haste. Another very similar brass, to the memory of Adam de Walsoken, lies by its side, with the date 1349. Both brasses are the same size, 10 ft. long by 5 ft. wide, and they probably came from Flanders, as they bear all the characteristics of Flemish work. Haines says:—"The principal lines are broader and more deeply cut, and wrought with a flat chisel-shaped tool instead of the ordinary engraving burin." The organ-case should be noticed as very fine, resembling in many points that in King's College Chapel, Cambridge. The Late Jacobean screen is worthy of notice; also the beautiful stall-work; this latter is of the most costly description, and very perfect, *temp.* Edward III. On one of the subsellæ is a head of Edward the Black Prince, together with his device of feathers, besides many other coats-of-arms of worthies who have long since ceased to exist, and whose names in many cases are forgotten.

St. Nicholas, the chapel-of-ease to St. Margaret's, is a fine church, 200 ft. long, originally built in 1160. The tower alone remains of the old building, which was replaced by the present structure during the years 1374–1419. Unfortunately, the church has been robbed more than once; few of the bench ends, which were very fine, remain, and the old glass has almost entirely disappeared. There is a curious inscription on a tablet, with date 1600, which runs as follows:—

> "A good steward is liberal and giveth to the poore;
> The wicked one as owner keepeth still his store;
> Distrusting God's providence hath made his heart hard;
> He doth not part from a penny in hope of rewarde."

Another slab in the pavement, with date 1789, in memory of Thomas Hollingworth, a bookseller, states that he was "a man of strictest integrity in his dealings, and much esteemed by gentlemen of taste for the neatness and elegance of his binding."

Leaving Lynn, and crossing the Ouse by the new bridge, we find ourselves in Marshland proper,—a district rich in churches. To the left the spire of Tilney All Saints; the grand tower of Terrington St. Clements on our right; a little further, the two churches of Walpole,—all these promise us good material for our sketch-book. Making our way to Tilney All Saints Church, we find a building containing work of every period, from early Norman to Perpendicular and Jacobean, with even some nineteenth-century additions. This is the more noteworthy because of the comparative sameness of the majority of those in the neighbourhood; with but few exceptions these are late Perpendicular, with occasionally small portions of a former structure remaining. This is the case at Walpole St. Peters, which possesses a Decorated tower and nave clear-story; how this latter feature has come about it is difficult to determine, for to all appearance the piers and arches which carry it are of a much later date,—but how or when it was done has not yet been settled, and it still remains an interesting but unsolved problem. Another noteworthy feature in this church is the way in which the altar is raised to a considerable height, to permit the construction of

a passage underneath. The total length of the old building equalled that of the nave as at present. The accommodation proving too small for the requirements of the parish, the church was remodelled, and a new chancel built at the east end of the existing one. A public right of way, however, cut across the proposed site, and apparently prevented this change from being effected; but the difficulty was met in the way indicated, and the height to which the altar is necessarily raised has an imposing effect. The roof of the passage underneath is richly groined, and has a profusion of elaborately-carved bosses at the intersection of the ribs. A similar expedient has been resorted to at St. Michael's, Norwich, but in this case it is not so conspicuous, as the church stands some way back from the main street.

The civility and kindness of the Norfolk folk are proverbial; this is specially noticeable in the way in which the architectural student or visitor is treated by the clergy of the churches he visits. At Walpole, the rector, besides offering the usual courtesies, takes the greatest interest in explaining the peculiarities of his church, when he can find an appreciative listener, and draws attention to many little points and details which the casual observer might fail to perceive. Of course some curious characters are to be met with. On one occasion a ladder was necessary to enable us to take some dimensions. On applying to the parson for help we were informed that one could be obtained opposite for the asking, and he gravely added, "I can assure you that that man (referring to the builder who owned the ladder) is a most excellent workman, *although he is a Dissenter*." At another time we were given permission to sketch, provided that beer-bottles and cheese-parings were not left on the founders' tombs. *Experientia docet.* Evidently, some one of the fraternity had been feasting at one and the same time both his inner and his outer man, and had left traces behind which were not altogether pleasing to the authorities that were. Our promise having been given, friendly relations were once more restored, to such an extent, indeed, that before parting, more than one empty bottle remained, not upon the founders' tombs, but on the rectory sideboard.

Making our way to Terrington St. Clements, we find a church well worthy of notice, containing an elaborate porch on the south side and a fine tower on the west. This latter is detached from the rest of the structure, having been built at a different date. It is thought by some to have been erected as a refuge from the floods, which in former times, as often devastated the country. The tower is built of stone brought down the river Nene from the Barnack quarries in Northamptonshire. This stone is of a blue grey colour, and is little affected by time or weather, the strings and moulded work being as sharp and clean now as when they left the hands of the mason. Almost all the neighbouring churches are partly built of the same stone, the only other material available being flint, and this latter is generally used for the body of the walling. The tower walls of Terrington, at the ground-floor level, are 7 ft. thick, fully bearing out the idea of having been built to resist the floods. It is related that in the year 1607 one of these floods occurred, and the Jury for the Hundred reported that, "in their distress the people of the town fled to the church for refuge, some to haystacks, some to the baulks in the houses, till they were near famished; poor women leaving their children swimming in their beds till good people, adventuring their lives, went up to the breast in the water to fetch them out at the windows. Whereof Mr. Browne, the minister, did fetch divers to his church upon his back. And had it not pleased God to move the hearts of the mayor and aldermen of King's Lynn with compassion, who sent beer and victuals thither by boat, many had perished; which boats came the direct way over the soil from Lynn to Terrington."

The danger of such a flood occurring again has been practically prevented by the great scheme known as the Nene outfall. A stream some 200 ft. wide and 24 ft. deep, embanked on either side, was formed in 1830 by Messrs. Rennie & Telford. This, by a direct route, takes the drainage of the whole of the North Level,—a district containing 48,000 acres,—and has converted a barren swamp into rich pastures and cornfields. "We may mention, as a remarkable effect of the opening of the new outfall, that in a few hours the lowering of the waters was felt throughout the whole of the fen level. The sluggish and stagnant drains, cuts, and leams in distant places began actually to flow, and the sensation created was such that at Thorney, near Peterborough, some fifteen miles from the sea, the intelligence penetrated even to the congregation at church,—for it was Sunday morning,—that the waters were running, when immediately the whole flocked out, parson and all, to see the great sight, and acknowledge the blessings of science."*

Perhaps the most remarkable of the Marshland churches is that at Walsoken, about one mile out of Wisbech on the Lynn road, and of which we give measured drawings in the present number. The west doorway of the church is a good specimen of Early English work, having a deeply-recessed and richly-moulded circular arch, carried by three slender detached shafts with carved caps,—these latter having been restored. The church is of large size, and presents internally a somewhat confused mixture; the arches which separate the nave from the aisles are semicircular, and have a heavy Norman zigzag moulding on the soffit; the columns which carry these arches are alternately circular and octagonal, and these octagonal piers are again varied by being placed the one with a plain face parallel to the axis of the church, the next one anglewise. This arrangement gives not a little variety to the arcade, an effect which is increased by the curious treatment of the chancel arch,—this is an unusual and not altogether pleasing feature. The arch is Norman, and is covered with several bold round chevron mouldings, as well as a lozenge ornament; it is pointed, and almost equilateral, while the shafts which carry the caps from which the arch springs are divided up every 2 ft. by large projecting annulets, which produce an effect of broken surface quite out of keeping with the severity of the rest of the work of the same period. The caps to the nave piers are carved, and are all different in design, but not specially noteworthy, except the responds at the east end, and these are good examples of the transition from Norman to Early English,—small knob-like leaves break out from the plain face of the cap, and these lead up to the chancel arcade, where the genuine Early English foliage appears. Over these arches a Perpendicular clearstory of three-light windows has been added, entirely obliterating in the nave all traces of the windows which formerly existed. In the chancel, however, the windows remain, notwithstanding later additions; the stone arches and jambs showing through the plastering clearly indicating the original design. A flat hammer-beam roof has also been added, and this will repay a careful examination, as it is in a good state of preservation, the greater part of the original colour decoration being very perfect. Taken as a whole or in detail the building is worth study, and a visitor to the neighbourhood should on no account miss seeing it, as the time occupied, even at some inconvenience, will have been most profitably spent.

The last church we can notice is that at West Walton, which is about one mile beyond Walsoken, and is of almost equal interest. The churchyard is entered under a detached Early English tower, which stands at a considerable distance from the main building, and is probably a trifle earlier in date; unfortunately the whole place is in a dilapidated and almost ruinous condition, besides having been sadly mutilated in past times; the clearstory is blocked up by the great fifteenth-century aisle roofs. The west wall has had two enormous buttresses added, in order to keep it from falling, and is painfully out of the perpendicular even now,—in fact, everything points to neglect and decay. Why a restoration is not attempted it is dificult to say. Possibly the expense would be too great, for the work is so elaborate and costly that a very considerable sum would be needed. The nave arches are carried on central stone piers, with four banded and clustered Purbeck marble shafts, the caps being carved with free Early English foliage, similar, both in design and execution, to that in the nave of Lincoln Minster. Strange to say, the carving has been but little injured, though in many cases the marble shafts have disappeared, and those that remained were in many cases broken and otherwise defaced. This richness of work is not confined to any particular part, but is apparent in the whole of the older parts of the building,—these include the nave and chancel, south porch, and a considerable portion of the aisle walling. This church is easy of access, being but a short distance from Wisbech, and not more than a few miles from Lynn; but it is a great surprise coming upon it unawares, even in a country such as Marshland, where there are continual surprises. It is in a district which has not been much studied, or even much sketched, but is one which deserves to be better known than it is, and which will well reward a visit.

* Smiles, "Engineers."

RELICS OF OLD LONDON.*

THE PHOTOGRAPHS FOR 1886.

WE use no trite form of words in saying that we receive this collection of views with a not unmixed pleasure, for they constitute the final issue of the Society's publications. Mr. Alfred Marks, the honorary secretary, should be warmly congratulated upon the progress and conduct of the enterprise. We are sure that his brother subscribers will cordially acknowledge him to have been the leading spirit in their undertaking, and that to his exertions, as to the skill of the Messrs. Dixon, the Society's photopraphers, its successful accomplishment,—despite many inherent difficulties of time and space,—is entirely due. That the work was not begun too soon is manifest from the circumstance that since 1875,—when the series was opened with six views of the Oxford Arms Inn, Warwick-lane,—many of the illustrated subjects have already ceased to be, including for instance, one of the two fine old shop-fronts in Soho, Oxford Market, Sion College, Temple Bar, the Oxford Arms itself, together with various antiquated tenements in Leadenhall-street, Fore-street, Gray's Inn-lane, and Aldgate.

It has been urged against these photographs that they give us very good presentments of advertisement placards, drawn blinds, and closed shutters. Criticism of this kind is as ill-considered as it is easy and illiberal. The "posters" and "boards" will show a future age how we disfigure our streets. Most of the outdoor views were necessarily taken when the city was in the condition that so forcibly struck Wordsworth as he crossed over old Westminster Bridge. That these were done in the early morning is obvious enough from the direction and length of the shadows, the unextinguished gas jets, the time as shown on certain dials, and the absence of wayfarers. Devotees of the picturesque must not look here for such attributes as are conspicuous in the cognate etchings, say, of Mr. Ernest George. But we do get an otherwise unattainable fidelity of outline and detail, lacking only the brilliancy and colour of the image that is cast by the camera lucida. The later issues are singularly good in their treatment of a difficult matter, the photographing of dark interiors; witness the Charterhouse and Temple groups. The exterior views are not free, of course, from what we may term the congenital defect of photographic pictures when applied to close perspective. The foregrounds stand out so disproportionately vast as contrasted with the middle and remoter distances. The camera rigidly fixes those nearer objects which the

* Photographs published by the Society for Photographing Relics of Old London. Alfred Marks, hon. secretary. Nos. 109-120. Issued, 1886.

eye does not take in except by its rapid,—albeit, unconscious,—movement. Moreover, no artistic skill has yet been able to transfer on to the flat sheet that indescribable effect of dimmed atmosphere and softened tones which by inductive experience the human vision associates with relative distance.

To the pictures under review, Clerkenwell and Westminster contribute eight subjects. Thus we have, on the one hand, St. John's Gate, the chimneypiece of Hicks's Hall, and the Court Room of the New River Company; on the other hand, Emmanuel (Anne, Lady Dacre's) Hospital, Queen Anne's statue in Queen-square, and three doorways in Queen-square, Grosvenor-road, and Delahay-street. This last "is from No. 17, Delahay-street, given by Mr. Hare,—I fear without sufficient authority,—as that of Judge Jefferies's house ('Walks in London,' ii., 226)." Mr. Hare, even at his best, is no very trustworthy guide. As it happens, this particular doorway is re-instated *in situ*, as Mr. Marks reminds us.* But Jeffreys's house, or rather what remains thereof, should be looked for at Chapel-place, Nos. 7 and 9, in the street, where the stone house with a circular flanking tower (*circa* 1870), occupies the site of Duke-street Chapel. The rest of Chapel-place is indubitably the house pre-figured as Judge Jeffreys's in Shepherd's earlier drawing, of which we have a print. In his description of the Tennis Court, James-street, Haymarket, Mr. Marks speaks of it and of its timber-fronted neighbour, "The Barn," as though they are relics, probably, of Piccadilly Hall. Certainly Clarendon's quoted description gives us an idea that the Gaming-house grounds were of considerable extent. Yet there seems to be some confusion here with the Gaming-house,—vulgarly known by the style of "Shaver's Hall," built by Lord Pembroke's valet,—which stood at the north-eastern corner of the Haymarket, just where, until the widening of Coventry-street, was Wishart's snuff and tobacco shop, a noted Jacobite rendezvous in its day. The Barn, by the way, was, about thirty-five years ago, Busher's coach factory, at which time the tablet, with date 1673, was affixed on the front wall of the house between the factory and the Tennis Court. It is now against the Tennis Court wall. Singularly enough, in Newcourt's map, engraved by Wm. Faithorne (1658), the Way to Piccadilly Hall is indicated (corresponding with the present Piccadilly), but whilst that hall is not marked by name the building at the corner of Coventry-street and Haymarket is designated as the Gaming-house. Piccadilly Hall, we gather, lay on the northern side of Coventry-street, at the angle with Great Windmill-street, in St. Martin's-in-the-Fields parish, and on the ground which is now covered by Scott's supper-rooms. Timbs (1855) says the house was demolished about 1685, and adds that "a tennis court in the rear remained to our time, upon the site of the Argyll Rooms [the Trocadéro], Great Windmill-street." The Tennis Court shown in the view was, we believe, built for King Charles II. It is that mentioned by Pepys (Jan. 4, 1663-4, and Sept. 2, 1667), wherein the King's play was extolled in such terms as are but fit in the case of a sovereign; though in no unmeasured phrase, almost worthy of Juvenal, Pepys in this instance marks his opinion of courtly sycophancy. Pity it is that the sums of money which were sunk in skating-rinks were not spent upon the revival of this right royal game. We are glad to see a picture of an old but little known friend,—the Bear in Lower Thames-street. He, of course, has nothing to do with the Royal Menagerie; but, with his collar and chain, he reminds us of his compeer, the Tower Bear, who, similarly secured, was allowed to disport himself and fish in the Thames. Perhaps the most interesting, though scarcely the most striking, photograph is that of London Stone. We are at one with Mr. Marks in his conjectures upon the origin and purport of that relic. Jack Cade, or "Mortimer," clearly went through no idle ceremony when he struck this stone with his sword, proclaiming himself at last "lord of this city." Were it, indeed, a milliarium, as Camden thought, we should have had, doubtless, some tradition of its situation by the Roman forum near to where is now the Mansion House. Its venerable antiquity opens many questions which we cannot discuss here. On the score of age and its supreme significance as a mute but incontestable witness to contracts and the like, its history should be read along with that of the hwæt-maund stone at St. Michael's le Querne, or ad Bladum, in Chepe. This latter is specified in a conveyance, A.D. 889, of the parcel of land whereon it stood by King Ælfred to Werewith, bishop of Worcester, relatively to the corn-market at that spot.

*Nos. 13 and 17, adjoining one to the other, seem to have replaced Nos. 13, 15, and 17.

NOTES.

THE second report of the Committee on the Ventilation of the House of Commons, just published, dealing chiefly with the causes of smells in the House, shows conclusively that the system of drainage, planned at a time previous to much of the modern sanitary gospel, requires a radical reform. The main sewer under the House is obviously far too large, and its invert at the junction with the public sewer is below the lowest level of the sewage in the latter, so that there must be always a standing pool at the lower end of it. The Committee propose to construct within the present large brick drain a smaller one, of a better section, about 3 ft. 8 in. high, by 2 ft. 4 in. wide in the clear, constructed of white glazed fire-bricks, in Portland cement; the remaining space in the existing sewer to be filled up with concrete. They propose that this new sewer should discharge into a vertical stand-pipe, whence the sewage should be pumped by Shone's pneumatic ejectors into the outside portion of the existing sewer, and run thence into the low-level main sewer, so as to cut the latter off from all connexion with the Houses of Parliament drainage system. They propose effectual means for ventilating the new drain by a fresh-air down-take pipe at the lower end, and a foul-air up-take pipe from its upper end into the shaft over the furnace in the Victoria Tower. This will be effectual. The Committee take the opportunity of making an attack on the state of the large low-level sewer adjoining, which the Chairman of the Board of Works, in answer to a question addressed to him in the House, said that his Board did not think it necessary to ventilate; "an opinion to which the Committee venture to think his Board will not long be able to adhere." The Committee, without echoing the groundless complaints that have been made about the ventilating system of the House (which, provided it has pure air to deal with, is really a very efficient one), point out quite rightly that where an extraction system is used there is a pull of air into the apartment, which facilitates the ingress of contaminated air escaping from pipes or waterclosets; and they recommend the substitution of propulsion, which we have repeatedly said is the true system to employ for large public buildings. There are propulsion fans and engines now in the basement of the House, for use when the state of the weather vitiates the action of the extraction system; so it is only necessary to substitute this for the extraction system. The report generally is a most sensible and practical document, which, we hope, will receive the attention it deserves.

ON the 31st ult. a banquet was given at the Hôtel Continental at Paris, by one hundred members of the Société Centrale des Architectes, to M. Charles Garnier, in honour of the decree of the presentation to him this year of the Royal Gold Medal of the Institute of British Architects. M. Achille Hermant, Vice-president of the Société Centrale, occupied the chair, the President, M. Bailly, being prevented by illness from attending. The chairman gave the history of the Royal Gold Medal, and proposed the health of M. Garnier, who, in replying, expressed in warm terms his sense of the kindness of his professional brethren on both sides of the Channel. The delegates of the Society of Architects of Bordeaux congratulated M. Garnier also in the name of the provincial architects of France. M. Paul Sédille, after reading letters from Mr. W. H. White, Mr. R. P. Pullan, and Mr. Aitchison, regretting their inability to be present on the occasion, proposed the toast of "Nos confrères Anglais" and the Royal Institute of British Architects.

THE Town Council of Bath have been occupied in considering the question of the proposed extension of the modern baths and its probable effect in destroying or obliterating part of the valuable and interesting remains of the ancient Roman bath. The report of the Baths and Pump-room Committee took the line that ancient remains should not be permitted to interfere with works of modern and public utility,—a line of reasoning which, in itself and in a general way, we should not be disposed to dispute; but, as we have already observed, the Roman remains at Bath are of very exceptional interest and value, and every effort ought to be made to avoid injuring or hiding them from view. As far as we can gather from the various very contradictory statements dropped at the meeting (as reported in the *Bath Journal*), it would appear that in the mind of the City Surveyor and his supporters utilitarian considerations have gained rather too much the upper hand. Alderman Murch, in a moderate and sensible speech, urged the importance of the ancient remains, and suggested that the basement of the proposed addition should be sacrificed, and that there should be fewer new baths. How far this would meet the case we cannot, of course, tell without knowing what is the actual demand for more bath accommodation. Alderman Gibbs proposed as an amendment that the report be referred back for fuller consideration, and that another architect should be called in to consult with the Surveyor (Mr. Davis) "as to the best mode of effecting the extension of the modern baths without any interference with the ancient remains." This would have been the best course to take, and we regret to observe that this amendment was lost by one vote (21 against 22). As the vote was such a near thing, we hope the matter will not be considered altogether settled. From the comments and correspondence in the local papers the result seems to be regarded in Bath with anything but satisfaction.

THE rule that before an award of an arbitrator can be taken up, his fees must be paid, frequently is very unjust towards the successful party. This has just been illustrated by the case of Westwood & Co. *v.* The Government of the Cape Colony. A lengthy arbitration between these parties as to certain work done by the former was held before Sir James Brunlees. Messrs. Westwood took up the award and paid the arbitrator's fees, amounting to 1,200*l.* odd. The award was in their favour, and the Government were ordered to pay the cost of the reference. On taxation 800*l.* odd of Sir James Brunlees's fees were disallowed, the consequence being, of course, that Messrs. Westwood will have to pay this sum out of their own pockets. The decision of the Taxing Master was upheld by the Court. No doubt the Taxing Master acted perfectly correctly in reducing Sir J. Brunlees's fees to the ten guineas per day which would have been allowed a Queen's Counsel, but the matter shows how hardly the rule we have mentioned presses on a successful party if it happens that he does not receive all the costs from the other side on taxation. It is one of the extravagances of an arbitration that private individuals are paid for services for which the time of a judge can be had for nothing. But in those cases where an arbitration is actually necessary it seems to us that the proper rule would be for the arbitrator to fix his charges beforehand, and at the end of each day's hearing each party should pay half the fee for the day. If either side refused to pay the fee, it should be the duty of the arbitrator to continue the reference without him, and if on the next hearing the party was still of the same mind, judgment

should be given against him, as in an action by default. The case to which we have alluded shows that, under the operation of the present rule, a successful party may be actually out of pocket as regards costs.

LAST year the Postmaster-General obtained the authority of Parliament by a special Act to acquire land in Birmingham for the purpose of erecting thereon additions to the present head office. With extraordinary want of foresight,—perhaps, if it were a private individual of whom we were speaking, we should simply say with great carelessness,—the Department did not make sure that such additions would prove adequate for the wants of that great city. So a new Bill is now before the House of Commons. It is naïvely remarked in the preamble, after various recitals from the preliminary "whereas," "but since the passing of the said Act [last year] it has been found that even if the said head post-office were so enlarged as aforesaid, it would in a very short time prove inadequate for the requirements of the public service"; therefore the Postmaster-General drops the Act of 1885, and wants powers to take other land for a new head office. But what can we think of the business capacities of a Department which in one year actually get an Act to enable them to add to existing buildings, and then, before the year is out, find that they must have new buildings? It is fortunate that the inadequacy of the additions to the present post-office at Birmingham has been discovered before they were erected; if this had not happened the country would have been put to a double expense, simply from a want of proper prudence in regard to the ascertaining of the required amount of space.

THE Post-Office Sites Bill, 1886, as the Bill above referred to is called, consists of fourteen clauses, most of them of a general nature, which would seem to be applicable to the purchase of sites in any place. Thus there is a power given to divert streets; it is to be enacted that the Postmaster-General shall not acquire ten or more houses occupied either wholly or partially by persons belonging to the labouring classes until the Local Government Board have sanctioned a scheme for providing new dwellings for such persons. It would be more satisfactory if a general Act were passed giving certain powers and rights to the Postmaster-General, and placing him under certain obligations when he has to purchase sites for post-offices. It seems to be altogether absurd to pass a Bill of this kind every time a site is required. It adds to the labour of Parliament, and it might be done once for all, so that all the world would know what was the law in case the Postmaster-General at any time desired to purchase a site for a post-office.

IN the last issue of the *Mittheilungen des Deutschen Archäologischen Instituts* (x. 3), Dr. Dörpfeld propounds an interesting, though rather startling theory. It has been universally accepted that the older Temple of Athene, on the Acropolis, which was destroyed by the Persians, occupied the site of the present Parthenon. The old temple was the work of the Peisistratidæ, and it is supposed that Themistocles employed a good deal of the unfinished structure as building material for the repair of the fortifications of the north Acropolis wall. Fragments of pillars of marble and of an architrave of porous stone have been found built into this wall. The difference of material has inclined Dr. Dörpfeld to suspect that they did not belong to one and the same temple. His theory is that the architrave remains of porous stone belong to the old temple of the Peisistratidæ, and that this was built, not where the present Parthenon is, but *between* the Parthenon and the Erechtheum, on a plateau 45 mètres by 22 mètres, where the remains of walls are still clearly to be seen. The whole of this temple was, he thinks, built of porous stone; it was of peripteral form, and he sees in its plan close resemblance to the old temple of Dionysos at Eleusis. Part of the present Erechtheum is built on its site. The remains of marble pillars, he thinks, belong to a later temple, begun by Cimon, and this temple, he thinks, occupied the site of the present Parthenon. It was left unfinished on the banishment of Cimon, and eventually superseded by the final Parthenon of Pheidias. The theory, like some others of the enthusiastic German architect, seems to rest on rather slight grounds.

THE same number of the *Mittheilungen* also contains a paper by Dr. Köhler and Dr. Dörpfeld conjointly on the Choragic monument of Nikias. The Choragic monuments of Lysicrates and of Thrasyllos are well known, but though the remains of the monument of Nikias have been accessible since the excavation of the Beulé Gate, they have not till now been reconstructed into an intelligible whole; in fact, Beulé, their discoverer, thought the architrave with the victor's inscription, the triglyphs, and the cornice, all belonged to separate buildings. On Plate VII. of the *Mittheilungen* Dr. Dörpfeld reconstructs for us the front view of the building, which has special interest because it offers a third and wholly different type of Choragic monument. The Lysicrates monument, it will be remembered, was a circular building of the Corinthian order; the monument of Thrasyllos was a small Doric portico, forming the entrance to a natural cave; the monument of Nikias is in the form of a small Doric temple, with six columns in front supporting architrave and low pediment. Dr. Dörpfeld notes that the remains have further interest in connexion with the question of polychromy; the main portion of the building was of white marble, the triglyphs of the much cheaper "poros." The triglyphs only bear traces of painting. Dr. Dörpfeld thinks that the triglyphs only were covered with a thick and opaque coating of paint,—hence the use of the cheaper material. For the special interest of the inscription on the architrave we refer our readers to Dr. Köhler's disquisition.

IN regard to the competition for the new façade for Milan Cathedral, of which we have already spoken, it is to be feared that the composition of the Jury will not inspire any greater degree of confidence than is usually felt in tribunals of this description. The competition is styled "international," but foreign nations will be very imperfectly represented by the three architects to be chosen by the Milanese Academy of Fine Arts. The plan of allowing the competitors to elect four members of the Committee is a novel one, but it is very doubtful whether it will be found practicable: and, if practicable, it must almost of necessity result in an advantage to Italians. The preparation of a design for the preliminary competition need not involve a large expenditure of time or money, and perhaps some English architects may think it worth while to send in designs. The superintendence of the model is another matter, and would probably be a long and difficult task, and would involve a lengthy stay in Milan. The Italian architect selected by the Academy of Fine Arts at Milan to serve on the Committee is the Cavaliere Giacomo Franco, Professor of Architecture at the Academy of Fine Arts at Venice.

THE *Berliner Philologische Wochenschrift* (May 29) reports a paper read by Dr. Petersen at the last meeting of the Archæological Society at Berlin. Dr. Petersen took part in both the expeditions recently made by Count Lanckoronski to Southern Asia Minor. He showed a number of plans and photographs which are to form part of the official report of the expedition shortly to be published. Special attention was drawn to the fortifications of Adalia. Seven plates are to be devoted to the detailed publication of the arch of Hadrian in that town, it being remarkably well preserved. On the site of the Greek colony of Sidè a richly-decorated fountain has been discovered, and the foundation of one of the gates of the town: the directions of the principal streets can be clearly made out, and a great number of colonnades opening in the streets are still traceable. A plan has been made of the ancient harbour, close to which the remains of an exedra-shaped building have been found. Eleven plates will be devoted to reproducing the famous theatre of Aspendos. At Aspendos and Sytheion only have inscriptions in Pamphylian dialect been found. Time was when Southern Asia Minor was a field of exploration peculiarly English: witness our Lycian sculptures in the British Museum. But our mantle has now certainly fallen on Vienna.

ON the 27th ult. the last meeting for the season of the Société Centrale des Architectes took place at Paris, when a paper was read by M. Napoli, Chief Engineer of the Laboratory of Physics and Chemistry in connexion with the "Chemin de Fer de l'Est," on "The Application of Electricity to Buildings." He went through the subjects of electrical transmission of force, telephonic communication, electric lighting for dwellings, application of electricity to lifts and to automatic fire-alarms, to the great interest of an audience of architects, among whom were present M. Garnier and M. Questel.

SINCE the publication in our last of Mr. Wild's letter about Christchurch, Brixton-hill, we have been to see what the churchwardens have done. They must, indeed, be penniless to have been obliged to cut a number of square holes in the aisle roofs, letting in the midday sun upon the heads of the congregation in the manner of a greenhouse. The effect upon the architecture is no less disastrous, the solemn tall columns being now seen in shade against these violent lights. The removal of St. Anne's Asylum has set at liberty a great deal of space formerly occupied by the steep gallery for the children, and it would seem an easy matter to re-arrange the organ so as to obtain room for increased light in the west wall; for the stained glass in the side windows, although evidently much darker than was intended by the architect, is very good of its kind, and must, no doubt, be left. As to the apse windows, one feels a delicacy in criticising what may have been memorial gifts to the church, but modern stained glass has been so much improved since they were executed that the substitution of paler glass to increase the light would be a welcome change.

OUR attention has been called to a trade circular which is being sent round by the "Providence Iron Works Company, Limited," to architects and engineers, giving information as to their improved riveted girders, and concluding with this clause, to which special attention is called by a "Nota":—

"A commission of 2 per cent. will be allowed to architects and engineers specifying our girders and brand. They are respectfully requested to send us, *as soon as possible*, a copy of any specification to that effect."

From the open and business-like manner in which this is done the only conclusion one can come to is that it is the result of sheer ignorance on the part of the Company issuing the circular. Do they know that every architect of respectability would regard that as an impertinence, and that those who entered into such an arrangement would be acting dishonourably towards their clients? Once more let us repeat what we have said before, that an architect has no business to consider any interests but those of his client in selecting the materials for use in a building, and a firm is doing a most improper thing in sending round such a notice to the profession. We charitably conclude that the "Providence Iron Works Company" are not aware that there is any impropriety in the matter, from the open way in which the offer is made, as offers of commissions of that kind are usually made *sub rosâ*, in diplomatic letters marked "private." Architects who value the dignity of their profession ought to decline to do any business with firms sending such circulars until the obnoxious paragraph is removed; but we hope the company in question will have the good sense to cancel it themselves.

ARCHITECTURE AT THE ROYAL ACADEMY.—VI.

THE first exhibit among domestic architecture, in the order of hanging, is

1,548, "A Country House in Hampshire," by Messrs. Wyatt & Spiers; what agents call a "bijou house," as appears from the plan, which the authors are to be commended for appending. The drawings consist of a small view of the drawing-room, with the bay-window stretching all across one side and giving a wide view of the prospect, and a perspective of the exterior, which latter is hardly architecture in the usual sense of the word; there is nothing that can well be called "design" in it, but it is entirely unobjectionable.

1,550, "A Mentone Villa," Mr. S. J. Newman. Another bijou house; a two-storied villa, in what may be called rural Italian style, with a plan appended, showing two sitting-rooms facing down the hill, and a "garden-room" on the ground floor of the short tower at the other end; a small open loggia between that and the porch.

1,553, "Old Falcon Inn, Chester," Messrs. Grayson & Ould. A "restoration" of a charming piece of half-timber work, shown in a neat perspective drawing. There is nothing to indicate how much is new and how much original.

1,555, "The Firs," Mr. C. Foster Hayward. A very nice water-colour drawing of a brick country-house of Queen Anne proclivities, with some good points about it. The doorway, set on diagonally at the angle, would probably seem to join the house rather awkwardly from some points of view. The bay-window and the gable flanked by chimneys on the left group well; the other front is rather fragmentary, and seems to want the details pulling together. No plan.

1,558, "Front in Terra-cotta, 17, Oxford-street," Messrs. Batterbury & Huxley. A pen elevation of a front partaking of Francis I. style, with Renaissance foliage decorations.

1,564, "House to be built near Guildford," Mr. W. S. Weatherley. A pleasant-looking country-house, shown in a pen drawing; lower story brick with stone dressings, upper story half-timber,—that is to say, we presume, the usual pretence of timber and plaster on a background of brick wall; the treatment of the entrance, with its carved panels over, is quietly picturesque, so also the projecting wings on the left, with the arcade connecting them. A plan is appended, showing that the sitting-rooms are pleasantly varied on plan, but the drawing-room would be rather deficient in light, considering that all the windows except that of the recessed bay are under verandahs.

1,566, "Dining-room, No. 3, Stanhope-place, Hyde Park," Mr. W. Flockhart. A pen drawing of a room, with plain panelled wainscot and decorated frieze over, rather sketchily shown. The general style of the drawing is effective in execution, but we may suggest that a table-cloth hanging over the edge of a table does not make a sharp black line at the angle, an incident in the drawing which jars on the eye.

1,568, "House at Ingatestone," Mr. G. Sherrin. A "rustic" house. The frequently-repeated scheme of wall below and black and white work above, rather overdone by now. No plan.

1,579, "Beauvale, Sunningdale," Mr. G. Vigers. An old English style of country-house, well carried out; brick below, plaster on first floor, and tiling between the main cornice and the higher roofs. A double-storied bay-window forms a feature, but there is no plan to show how it works in.

1,580, "The Briary, Cowes," Mr. Aston Webb. Is this an addition to an existing house? It looks rather like it, the left-hand part being the addition. In the right-hand portion the gables are cut off awkwardly from the main wall by the heavy cornice below, and seem to rise again out of the slope of the roof. The additions (?) at the left are in the same general style, but avoid this defect. A plan is appended. The house is of the practical order, and does not suggest "the briary"; it is too prim and proper for the title.

1,585, "Houses in Hans-place," Mr. C. W. Stephens. Heavy, and not picturesque. Would perhaps look better in a coloured drawing, showing the brick tones, &c., than in this rather weak pen drawing. No plan.

1,591, "Three Cups Hotel, Colchester," Messrs E. I'Anson & Son. A rather heavy "country inn" design, with mullioned windows, semicircular projecting bays on corbels, gablets with strap ornaments, and panels with sunflowers growing in them, as they grow in some recent city buildings. If, as we presume, this is the accepted design (there was a competition), there were some better ones, architecturally, submitted. It might look better in another drawing, this one being in a heavy style devoid of artistic touch. No plan is given, so we cannot judge what may be the practical merits of the building for its purpose.

1,592, "Saighton Grange, Cheshire, before Restoration," Mr. E. Hodkinson. A very good sepia drawing of a delightful massive Late Gothic gatehouse, with later additions tacked on to it. The author knows how to handle the brush.

1,593, "Additions to the Park, Ledbury," Messrs. R. Coad and J. M. Maclaren. Nothing to show whether any of this is old or whether it is all addition. If the latter, there is too much affectation of antique style about it; if it were old one would say, what a nice old house; but, as new work, it is rather a masquerade, like some other modern housework. No plan is given, and we are left entirely in the dark as to what is the nature of the additions or how they combine with the old building.

1,594, "Design submitted for the Three Cups Hotel, Colchester," Mr. R. A. Briggs; hung high; a better drawing than the selected one for the same building, but not one of those which we remembered as superior to it in design.

1,596, "Study for an Italian Villa," Mr. R. Phené Spiers; a coloured elevation, savouring of the air of the École des Beaux Arts,—correct, finished, cold. The author laudably appends a plan, but the drawing is hung too high to see either that or the detail of the front.

1,597, "Holcombe Wood, Kent, Garden View," Mr. John Belcher. An eccentric sketch in coloured chalk on grey paper, apparently by Mr. A. B. Pite, showing the walls and the tiled roofs their natural red in the midst of a landscape of a ghastly grey. The house has picturesque points, especially the octagonal turret at the re-entering angle, with its chequer work upper story. No plan.

1,598, "Wrea Head, near Scarborough," Mr. E. Burgess. A cold, feelingless Gothic house shown in a neatly-finished, hard, uninteresting drawing, hung much better than it could rightly claim to be. The only good point in the design is the large mullioned hall and staircase window filling up the whole wall surface between two projections. The author has given a plan, which appears a good one.

1,602, "New Houses, Cadogan-square," Mr. J. J. Stevenson. Like many other houses in the same neighbourhood (many by the same hand). There have been better ones from Mr. Stevenson than these, or they look better in the carefully executed water-colours he has generally sent; these, drawn in pen and ink, appear to us hard, wiry, and almost as uninteresting as domestic architecture by an architect could be made.

1,607, "Knighton Spinnies, Leicester," Messrs. Goddard and Paget. A beautifully-executed water-colour drawing, showing a picturesque house, brick, tile, half timber, many gables, and cottage and stable buildings beyond, in the midst of a sunlit flower-garden with thick clipped hedges dividing one lawn from another. The object of the drawing seems to have been to show an English home as Tennyson pictured it in the "Palace of Art,"—

> "A haunt of ancient Peace."

There is nothing specially to remark on in the architecture of the house. It is picturesque, and lends itself admirably to the kind of effect depicted in the drawing. No plan is given. The drawing is certainly one of the pleasantest to look at among the domestic architectural drawings.

1,608, "Design for a Town House," Mr. Gerald Horsley. This very original design was published in our pages. It is somewhat beyond the scale of what is usually spoken of as a town "house:" it is rather a mansion. The cornice is prodigious in projection, and on too large a scale altogether for the order under it; but there is a great deal of boldness in the design. No plan.

1,611, "Kensington Court," Mr. J. J. Stevenson. A pen drawing of a block of houses surrounding three sides of a quadrangle, similar in general character to those in Cadogan-square, before mentioned, but with more variety and picturesqueness of detail. The interposition of a house of positively Gothic detail and feeling among the "Queen Anneries" is happily thought of as a bit of variety in the picture. No plan.

1,613, "Houses: Pont-street," Mr. C. W. Stephens. A pen drawing of brick houses, hung too high to be well seen; heavy, but solid looking; the projecting bays finishing with deep cornice and frieze. No plan.

1,617, "Chambers and Shops, Mount-street," Messrs. Ernest George & Peto. This very picturesque street-front we have already illustrated. The shop-windows are treated with bold arches, with adequate piers between; the shops are continuous in design, but the upper stories are pleasantly varied, the projecting bays in one portion being square, with mullioned windows, the others three-sided, with smaller windows. The pierced balconies and the open tracery finish to the square bays are picturesque points of detail. The whole form a building containing so much real character that it was quite unnecessary to give the design a factitious interest by a drawing studiously treated so as to give an old and weathered look to the buildings. This is affectation. A great deal of the best architecture in the world is unfortunately old, and more or less dilapidated; but it was once new, and there is nothing sinful or inartistic in a new building that there should be an effort to make it look old.

LETTER FROM PARIS.

DEATH has been sadly busy among the ranks of the painters. Scarcely has Paul Baudry departed, than Isabey, Edouard Frère, and Karl Daubigny have followed. The two last have occupied an honourable place in art, but Isabey was incontestably a master of more than fifty years' renown, who had the good fortune to see himself placed, from his first appearance, among the great ornaments of his country.

Eugène Louis Gabriel Isabey was born at Paris in 1804. His teacher was his father, the celebrated miniature-painter, and his earliest pictures, "Un Ouragan devant Dieppe," and "La Plage de Honfleurs," both exhibited in 1827, as well as the "Port de Dunkerque" (*Salon* of 1831), and "Combat du Texel" (*Salon* of 1837), placed him in the first rank of painters. Among other admired works are "L'Arrivée de la Reine Victoria au Tréport" (1846), "Le Départ de la Reine d'Angleterre," "L'Embarquement de Ruyter" (1851), "L'Alchimiste," &c. Isabey, who, during the Siege and the Commune had found a generous hospitality in London, occupied his last fifteen years in producing admirable water-colours; and it is only since the last year that he abandoned his pencil. In this painter, young almost to the last in his art, we have lost one of the last and most brilliant representatives of the older French school of this century.

Edouard Frère, who died at the age of sixty-seven, had studied in the atelier of Paul Delaroche. He executed an immense number of *genre* pictures, popularised by engravings, and his work was as well known in England as in France. He had the gift of rendering the movement and expression of life in his figures, while attending at the same time very carefully to the execution of accessories.

Karl Daubigny died at the early age of forty. He was the son of the celebrated landscape painter, whose general manner he continued, though with a rather heavy touch, but with the same artistic conscientiousness. His picture, "La Vallée de la Scie," gained him a "Première Médaille," and the present *Salon* possesses one of his last and one of his best works, "Lever de Lune au Soleil couchant."

About the same time last year we mentioned the death of De Nittis, the clever and agreeable painter of Parisian fashionable society. His principal works have now been collected by the care of M. Bernheim, and the re-inspection of them confirms the impression they formerly produced.

Parliament is actively busied about the question of the Metropolitan railway, on which we have touched several times. The formation of the system of lines is getting into a practical stage, but it is of importance that its route should be laid out so as not to spoil the appear-

ance of the city or injure any of the buildings of historical interest. In regard to this view of the subject, the Society of "Amis des Monuments Parisiens" is disturbed by the projects of the municipal engineers, and M. Charles Garnier has been appointed the interpreter, to the "Ministre des Travaux Publics," of these artistic pre-occupations. It is hoped that the Government will take the application of the eminent architect into serious consideration, and that, while satisfying public requirements, it will respect the picturesque and archæological claims of Old Paris.

The preliminary work has been commenced for the transformation of the old Halle aux Blés into the Bourse du Commerce, according to the design submitted to the Municipal Council by the architect, M. Blondel. According to this design three lofty central entrances flanked by columns, surmounted by a pediment crowned by allegorical sculpture, will give access to the edifice. All round the main cornice are to be statues representing the chief cities of France. The existing cupola is retained, but filled with glass in the upper portion; the lower part will be occupied by a decorative ceiling by an eminent artist; and lastly, in the three principal avenues facing the three entrances will be groups of sculpture, for which M. Blondel hopes to secure the co-operation of such eminent sculptors as MM. Chapu, Mercié, Millet, or Falguière. We may add that the design leaves absolutely unaltered the curious fountain in the centre, the work of Jean Bullant.

We may announce also the speedy demolition of the Quadriga group which surmounts the Arc de l'Étoile, which has long disgraced this fine monument, besides threatening danger from its dilapidated condition.

The environs of Paris will soon boast of a new Hôtel de Ville, at Suresnes, the design for which has been chosen in a public competition recently decided. Three premiums have been decreed by the jury: the first to M. Bresson, who is commissioned to carry out the building; the second to M. Ronyer; and the third to M. Loviot.

A great competition has been open, for some days past, at the Hôtel de Ville, for the buildings for the Exhibition of 1889. We must say at once that the programme, rather hastily drawn up in the Ministère du Commerce, leaves much to be desired in the way of perspicuity. However, in spite of obscurity of instructions and shortness of time, 107 architects have responded, and the designs were on public view up to the 31st of May. Ninety were thrown out on the preliminary examination, and at the final one three designs were selected as equal in merit, and obtained the three first premiums, each of 4,000 francs. The authors of these are MM. Dutert, Eiffell (in collaboration with M. Sauvestre), and Formigé.

Among other conditions, the official programme imposes on architects the obligation to show on plan, section, and elevation, an iron tower 300 mètres in height. The gigantic construction, the [illegible] of which is very [illegible], was not calculated to stimulate the artistic spirit of the competitors, who have struggled bravely to produce an artistic and well-balanced *ensemble* with this "tower of Damocles" hanging over their heads.

M. Dutert plants his tower on the Champ de Mars, isolated from the main exhibition building, in the midst of a great park, over which are scattered exotic architectural constructions half hidden among trees.

M. Eiffel, the initiator and first proposer of this abnormal tower, places it at the entry of the Champ de Mars. His design is a triumph of metallic construction; vast, commodious, exceedingly practical, but as ugly as an iron railway station; with immense iron galleries, in horse-shoe form, furnished with an aërial railway to take spectators all round the exhibition.

M. Formigé, whose design is much more decorative, leaves the famous tower nearly out of consideration, merely showing it formally, so as to satisfy his competitive conscience. Though a little heavy, his principal façade has a grand monumental aspect, with the central pavilion united to two angle pavilions by long lines of arcaded galleries decorated with frescoes. Each pavilion is surmounted by a cupola, adorned with statues and winged genii.

Three premiums of 2,000 francs each have also been awarded to MM. Cassien-Bernard an Nachon, M. Raulin, and M. Deperthes. In th design of the first-named, the buildings on the Champ de Mars are not very remarkable, but the tower, planted boldly on the Seine as an immense bridge, serves as the entry to the Esplanade des Invalides transformed into a park, with the axis occupied by a vast avenue of foreign-looking constructions. Very remarkable also is the design of M. Raulin, who places along the banks of the Seine, from the Invalides to the Champ de Mars, a length of about two kilomètres, a line of various edifices, Egyptian houses, Turkish mosques, Chinese pagodas, Indian temples, whose minarets, domes, and colonnades would give to that part of Paris the illusory appearance of a city of the far East, reflecting, like Benares, its palaces in the waters of the sacred stream.

We give our preference, nevertheless, to the design of M. Albert Ballu, which has only obtained, however, a third premium of 1,000 fr., along with those of MM. Pierron, Hocherau, Vaudoyer, and Fouquiau. M. Ballu's tower, which rises above a gigantic portico ornamented with allegorical statues, is crowned with a sphere on which hovers the genius of France. The ensemble of the Champ de Mars buildings is less successful, but the interior of the Palais des Beaux Arts, which he proposes to erect on the Esplanade des Invalides, is remarkable for its architectural taste and elegance. M. Fouquiau has evidently aimed at reproducing the constructions built by him at Amsterdam for the International Exhibition of 1883. If the special character of that exhibition, and the colonial connexions of the Dutch Government, might have justified that pseudo-Asiatic luxuriance, this does not apply to Paris, and the design, commonplace enough otherwise, only recalls what we have seen in former exhibition buildings.

MM. Simil, Claris and Morel, Walwein and Proust, Gaston Hénard, Blondel, and François Roux, have each obtained honourable mention, but there is nothing in their designs out of the common way or meriting special description.

It remains to be seen what the Government will do. Will it adopt one of the three first premiated projects, or combine ideas or parts from all of them as may seem to best suit the requirements of the situation? Or has the Government only wished to give the architects the platonic satisfaction of having the competition which they asked for? We shall soon know, for to secure the subvention of the City authorities it is a condition that the work should be commenced in September next, so that a prompt decision is imperative.

As to the tower of 300 mètres, although, according to M. Berger's lecture at the Société Centrale, it ought to mark "the apogee of the age of metallurgy, to which will soon succeed the age of electricity," we earnestly hope it will be abandoned. It is entering on an enormous and useless expense to end in a sham. Besides, it will be absolutely injurious to the picturesqueness of Paris, as it will destroy entirely the scale of the panorama as now seen from the rising grounds surrounding the city; this tremendous tower will dwarf the effect of the whole.

Contrary to all expectation, the sculptors have not secured the "Médaille d'honneur" of the *Salon*, after all; only seventeen votes went to avenge for poor Schœnewerk the neglect in which he lived, and of which he, in fact, died; and in architecture, M. Ballu obtained only seven votes; while among the painters, after two votings, M. Jules Lefebvre received 183 votes from among 367 voters, as against 79 given for M. Benjamin Constant and 38 for M. Humbert. Without questioning the great talent of the recipient of the medal, the result has caused some surprise, but no regret, for M. Lefebvre is a favourite in the artistic world, which feels a satisfaction in seeing this crowning of a long career of fine work.

School of Art Wood-Carving.—The students at this school (which, it will be remembered, is carried on at the City and Guilds of London Institute, Exhibition-road, South Kensington) have just finished a handsome carved mantel and over-mantel for H.R.H. the Rajah of Kooch Behar, from designs supplied by Mr. John Hungerford Pollen, M.A. The mantel-piece is executed in teak wood, and the whole is effectively carved, and may be seen at the School on application to the Manager for permission.

FURTHER NOTES ON THE EDINBURGH EXHIBITION.*

ENTRANCE is obtained to the Exhibition grounds at the north-east angle under a large archway of cast-iron. The archway is a very solid-looking affair, at least 50 ft. high, having a frieze decorated with wreaths in relief and a dentilled cornice, upon which is a trophy of flags (cast iron) and vases at each end; the spandrels have shields in relief and the uprights have moulded angles and laurel foliage in relief on the surface. The whole of this portion of the structure might reasonably have been constructed in stone, and then it would not have elicited admiration, but in cast iron it is simply detestable. The gates attached are fair specimens of their class, such as are usually found in price catalogues. The castings are sent by the Grahamstown Iron Company, Falkirk.

To the right of this entrance there is a model block of workmen's dwellings, designed by Mr. Gowans. They are only two stories high, but other stories might be added without affecting the internal arrangement. It has been the endeavour of the architect to show what can be done in this direction by the utilisation of cheap but durable material. The walls are constructed of the granite and Whinstone blocks used for street paving, backed by refuse stones from freestone quarries, and the dressings are formed of portions of freestone cut off when lintels, &c., are being dressed for superior structures. The entrance is ample, and the stair is in easy flights and well lighted, as are all rooms and passages. The sanitary appliances and internal fittings, which are excellent, are contributed by a number of tradesmen.

In connexion with this subject the Executive Committee intend to invite competitive designs for workmen's dwellings, which are to be exhibited in Mr. Gowans's block. A diploma is to be awarded to the author of the most approved design as regards plan, cost, and external effect.

Against the external east wall of the Exhibition Buildings, Mr. William Langlands, Myreton Quarry, near Dundee, exhibits a plat, steps, and flagstone of a fine, hard, durable, blue freestone, suitable for monumental purposes as well as for stairs, &c. The plat is 9 ft. square, and the steps (two) 19 ft. long each. One is shown with a plain machine-edge, and the other with a bottle and fillet, also machine-wrought. The edge of the plat and the pavement show the difference between the machine and finely-wrought handwork.

In Court 2, No. 25, Mr. Marcus Bain, the lessee of Ballochmyle Quarries, Ayrshire, shows an octagonal memorial cross, as a sample of the stone which constitutes one of the chief commodities of the Land of Burns. It is possessed of admirable qualities, and is of a deep red colour. Now that the desire is spreading for the introduction of coloured material in the exterior as well as the interior of buildings, this stone will be found well adapted for the purpose. Builders give it a good name as regards ease of working, and it seems to possess the elements of durability. The percentage of soluble matter is 1·8, and the pressure tests are stated to be high. It is extensively used in the West of Scotland, and is exported to Ireland, London, and the United States. Amongst buildings constructed of it may be mentioned the offices of the *Glasgow Citizen*, the Burns Monument and Museum at Kilmarnock, and the station and hotel recently opened at Ayr by the Glasgow and South-Western Railway Company.

In a separate pavilion Messrs. P. & R. Fleming & Co., of Glasgow, have a large display of agricultural implements and fittings. The place of honour is given to a model of a farm-steading on the estate of Roseneath, Dumbartonshire, erected to the order of His Grace the Duke of Argyll. The whole steading is covered in by a series of semicircular corrugated iron roofs. If Mr. Ruskin should visit the lovely Gareloch scenery the sight of this erection may drive him frantic. In good truth, it is with extreme regret we observe that in many parts of the Highlands the thatched or slated roofs are being superseded by corrugated iron ones, which no length of time appears to mellow into harmony with the surroundings.

An adjoining pavilion is devoted to the display of Willesden roofing. Willesden paper is stated to be water-proof, rot-proof, and to be a warmer covering than slate, and it is certified to have

* See pp. 671, 703, *ante*.

"weathered the 2·95 in. rainfall and gale of September 3rd and 4th, 1884." It is formed of various thicknesses, and in different tints of green and brown. The sample shown on the pavilion roof is neutral green in colour, and soft and pleasing in effect. If this material should prove equally serviceable as galvanised iron there can be little hesitation in giving it the preference, for besides its inoffensiveness as regards appearance it is easy of application and cheap, the prices being 1s. and 1s. 2d. per yard, 2 ft. 3 in. wide. It possesses also the quality of lightness, one ton covering 13,500 square feet, whereas one ton of galvanised iron covers 2,170 square feet only.

Red tiles are, to a considerable extent, superseding slates, and they are finding favour in Scotland as elsewhere, although not to the same extent as farther south. Scottish manufacturers are turning their attention in this direction, and we find admirable specimens of Roman, flat, and ridge tiles, finials, facing bricks, &c., produced by Messrs. W. R. & J. Carmichael, of Alloa. Court 6, No. 854.

A small model roof in Court 6, No. 831, has specimens of flat tiles, hip tiles, and ridge tiles, by H. J. and C. Major, of Bridgwater. The flat tiles have a roll moulding from ridge to eaves, which gives them a character somewhat different from those generally in use.

In Court 2, No. 7, Messrs. Stuart & Co., of Cliffe-on-Thames, and Torphichen-place, Edinburgh, have a "Granolithic Trophy." It is 20 ft. long and 18 ft. high. At each corner are fluted columns with Corinthian capitals, 16 ft. high, standing upon richly ornamented bases. Between these there is a dado, consisting of dies and balusters with female figures supporting an entablature. Within this there is a massive mantelpiece, 6 ft. wide and 8 ft. high. There are also stair-steps and window mullions dressed in different manners. They also show the materials from which Portland cement is manufactured and the granite as specially prepared for mixture therewith. The cement is passed through a sieve containing 2,500 meshes to the square inch, and stands a strain of 500 lb. on the square inch at seven days.

From Macdonald & Co., Aberdeen; D. H. & J. Newall, Dalbeattie; and the Ben Cruachan Granite Company, we have polished and incised crosses and tombstones in red, grey, and blue granite; and different monumental sculptors show examples of their designs in this material. Amongst these we note Mr. J. H. Kerr, Dalry-road, Edinburgh, "Mural Monument executed in the Italian style, with marble figure emblematical of Faith," &c.; Thomas M'Ewen, Lothian-road, Edinburgh, "Life-sized Statue of Hope, in Sicilian marble, on Peterhead granite pedestal, with Ratho whinstone under base," marble monument inlaid with lead, &c., Nos. 1–6, Court 2. Mr. J. A. Kennedy, Pitt-street, Edinburgh, sends a mantelpiece in Keene's cement, mirror frame in plaster above; very neat, but a misappropriation of the materials.

There is abundance of cast-iron productions of this description, including mantels and over-mantels, in imitation of oak and other woods, from the Mushet Ironworks, Dalkeith, Court 17, No. 982, but there is very little wrought-iron work. In Court 6, No. 825, are a pair of wrought-iron entrance-gates, by Hill & Smith, Brierly Hill Ironworks, Staffordshire, which do not appear to us remarkable either in the way of design or spirited treatment; and in Pavilion No. 2,216, there are railings, &c., from Cockburn & Co., of Gowanbank Ironworks, Falkland, commonplace in design.

The slates produced in Scottish quarries are generally thick and heavy, but durable. Those exhibited by the Aberfoyle Slate Quarries, Limited, Class 1, No. 6, upon a small model, are of this description, and are of a quality to withstand the severe gales which visit the northern coast-line. The rock is also shown in different stages of its manufacture and of several classes. It does not appear to be readily obtained in slabs of extra size, and is more suitable for useful than ornamental purposes.

Anderson & Sons, Marshall-street, Edinburgh, Class 1, No. 30, show rough and finished roofing slates from Craiglea Quarries, of excellent quality. This slate is suitable for ornamental purposes and mantel-pieces, finished with a very high polish, which brings out the colour admirably. The enamelled table, with landscape, is not so much to our taste. Slate may indeed be enamelled so as to resemble marble in a manner highly deceptive; but it is liable to be chipped, and, when the enamelled colour is light, the dark material beneath painfully betrays itself. We have seen enamelled slate applied to exterior decoration, but in the course of a year or two it loses lustre, and becomes dull.

Pavement flags are to some extent now superseded by cement for footpaths, but they have one advantage over that material, they can be lifted and relaid. The best Scottish quarries are situated in Forfarshire and Caithness-shire. Of the latter we have specimens from Castlehill quarries, near Thurso, Court 2, No. 29, and from Forss Caithness Pavement Company, Limited, Court 2, No. 41. Slabs can be procured of any size required that can readily be carried by ship or rail, special vessels being constructed for exportation. The material is remarkable for the tear and wear it will sustain, and for its non-porosity. For water-tanks, hearthstones, and fireproof flooring it is most useful. Currie & Co., Leith, Court 2, No. 27, exhibit fine specimens of Arbroath and Caithness pavement. Galloway & Co. show the same material, Court 2, No. 39, along with stone steps, bottles, &c., from the Gagie Quarries, near Dundee, and Arbroath steps, wrought by machinery, are exhibited in the grounds by Walters & Jackson, of Edinburgh.

THE SURVEYORS' INSTITUTION.

THE annual general meeting of this Institution was held in the Lecture Hall, 12, Great George-street, at three o'clock on Monday afternoon last, the retiring President (Mr. E. I'Anson) occupying the chair. The ballot for the election of the new Council having been declared open, the annual report on the affairs of the Institution was read to the meeting. We append a few passages:—

"During the past year 55 new Members have been elected, viz., 3 Honorary Members, 25 Fellows, 22 Professional Associates, and 5 Associates,—making, with 34 new Students who passed the Preliminary Examination in January last, an addition of 89 new names to the roll. Against this, however, has to be placed a large deduction representing losses by death, retirement from the profession, or on account of inability to maintain the payment of subscriptions, leaving a net increase of 19 of all classes. There has been a slight increase in the income proper during the year, due in part to additional subscriptions, and in part to a slight increase in the amount of fees received for hire of arbitration rooms. On the capital side of the account a further sum of 2,000*l.* has been invested in New 2½ per Cents.

The Institution investments stood at Christmas 1885 as follows, viz.:—2,541*l.* 9s. 6d. Consols, on Revenue Account; 6,350*l.* 15s. 10d. New 2½ per Cents. on Capital Account; 539*l.* 11s. 2d. Reduced 3 per Cents. on Library Account; and 228*l.*, North British Railway Preference Stock, on account of the Crawter Bequest.

A sum of 1,000*l.* has been added to the investments in New 2½ per Cents. during the present year.

The unabated interest in the proceedings of the ordinary general meetings is attested by the volume of 'Transactions' (the eighteenth of the series) now approaching completion. The Council have endeavoured, as far as possible, to consult the tastes and interests of the various classes of members in the order in which the papers have been taken, and this has necessitated the holding over of several excellent papers until next session. The welfare of the Institution is very largely dependent upon the character of the papers read and of the discussions that take place at the fortnightly meetings. The collection and dissemination of information was one of the principal purposes for which the Institution was established, and it may be claimed for the 'Transactions' that they have admirably served this purpose.

It appeared, however, to the Council that something further might be done in the same direction, without trenching in any way on the proper province of the 'Transactions,' by means of an occasional publication comprising short items of professional information of the nature and under the title of 'Professional Notes.' The two numbers of the new publication already in the hands of the members will enable them to form an opinion as to the nature of the experiment. Whether it will be justified by success will depend upon the support it receives from the members. The plan of the 'Professional Notes' is wide enough to embrace every kind of contribution, and, as members come to recognise their practical utility, the number of original contributions and items of interest communicated will, it is hoped, be largely multiplied.

The Examinations continue to attract an increasing number of Candidates, notwithstanding that proof is now required of previous practical experience in a surveyor's office. About the usual proportion have satisfied the Examiners, but the Council will look for a better knowledge in some of the more important subjects on future occasions.

The Council have carefully watched various measures recently introduced into the House of Commons affecting the interests with which surveyors are identified. It is impossible to regard some of these proposals as serious projects of legislation, or to look upon others as framed with a due sense of the consequences likely to result from their finding their way into the Statute-Book."

The report having been adopted and the ballot having been closed, the following was declared by the scrutineers to be the result of the voting:—

President.—Mr. William James Beadel, M.P.

Vice-Presidents. — Messrs. E. P. Squarey, R. C. Driver, F. Vigers, and C. J. Shoppee.

Members of Council.—Messrs. T. Chatfeild Clarke, D. Watney, J. Martin, W. Fowler, H. J. Castle, R. L. Cobb, A. M. Dunlop, C. Oakley, R. Vigers, T. M. Rickman, and R. G. Clutton (Members); Mr. E. Smyth (Professional Associate); and Mr. J. Wolfe Barry and Sir Richard E. Webster, Q.C., M.P. (Associates).

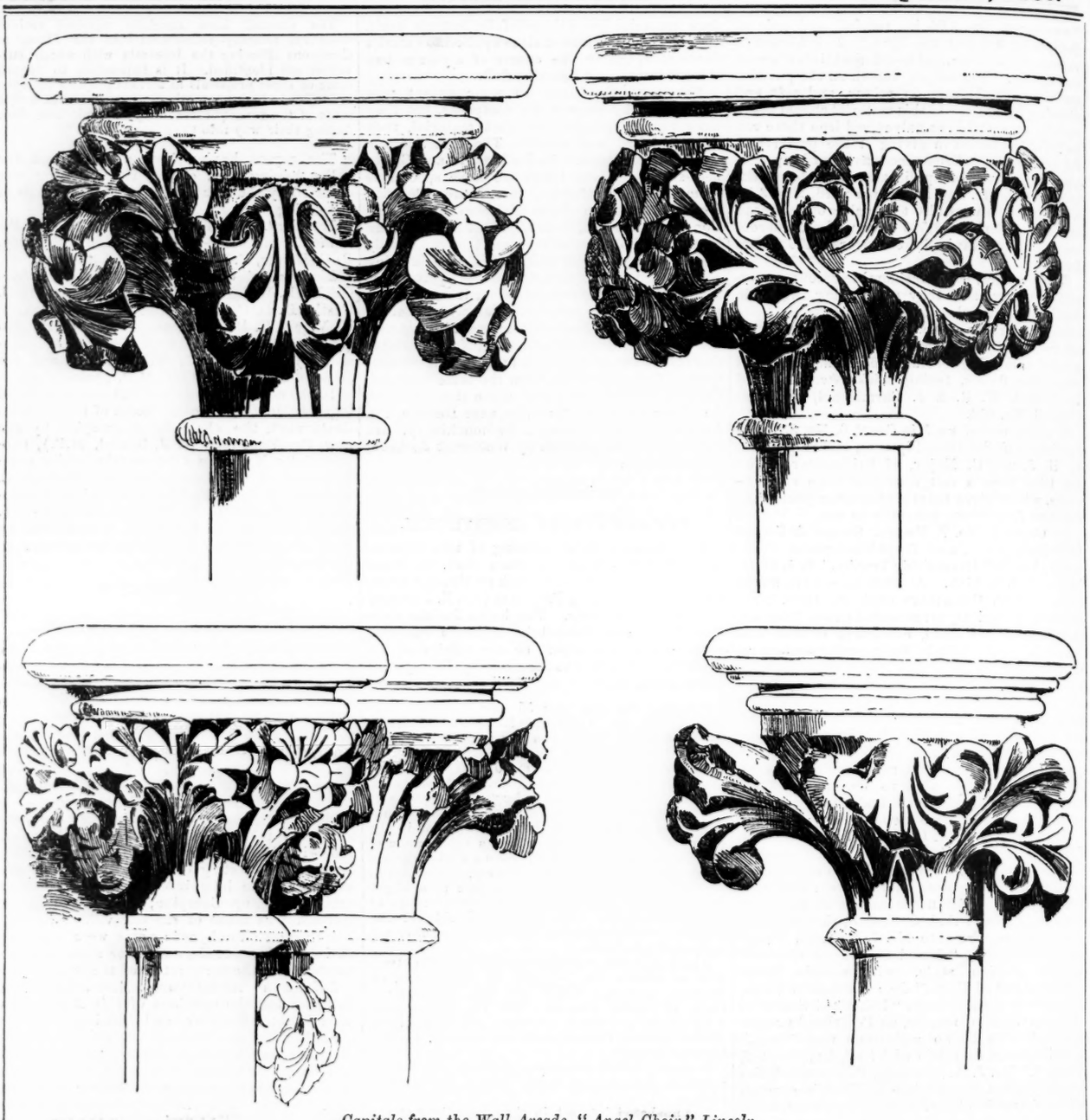
In the evening upwards of 100 members dined together in the Venetian Room of the Holborn Restaurant, the chair being occupied by the new President (Mr. W. J. Beadel, M.P.), supported by Mr. John Clutton (the senior past-President of the Institution), Sir Richard E. Webster, Q.C., M.P. (the newly-elected Associate of Council), Mr. T. Huskinson, Mr. W. Sturge, Mr. E. Ryde, Mr. T. Smith Woolley (past Presidents), and a large attendance of the Council.

ARCHITECTURAL SOCIETIES.

Birmingham Architectural Association.—On Saturday afternoon last this Association made an excursion to Fenny Compton and Burton Basset Churches, Warwickshire, under the guidance of Mr. Jethro A. Cossins. On arriving at the station the party walked to Burton Basset Church, which is picturesquely situated on the sloping ground, and contains good examples of Norman, Early English, Decorated, and Perpendicular work. A halt was here made for an hour to allow members an opportunity of taking away in their sketch-books, and with the aid of photographic apparatus, the many interesting details of the church. A walk over the hills brought the party back again to Fenny Compton, where a due inspection was made of the old village houses, church, and churchyard: notes were taken of all interesting details, and after sketching for another hour the party returned to Birmingham.

Edinburgh Architectural Association.—On Saturday last the members of this Association travelled to Carnock and Stirling on their annual excursion. Carnock House, over which the party were shown, is a most interesting and little-known specimen of Scottish architecture of the sixteenth century, exhibiting both the solid building and the picturesque grouping characteristic of that period. In the early part of the seventeenth century the windows of the south front were enlarged and dormer windows introduced into the roof, while of the same date there are some beautifully panelled and decorated ceilings in the dining-room and drawing-room. The party afterwards drove by Bannockburn and St. Ninian's to Stirling, where they were conducted over the Castle by Mr. David MacGibbon. The Sallyport, the old Parliament Hall, the chapel, the Douglas Garden, and the Palace were each visited in turn. The next place visited was Argyle's lodging, plans of which were exhibited by Mr. MacGibbon, who pointed out the portion built by the Earl of Stirling, as distinguished from the somewhat later portions added by Argyle. A feature not common in Scottish buildings of this period consists in a wooden staircase rising from the hall to the first floor, although this feature was common enough in English mansions of the same period. The east and west churches were examined under the guidance of Mr. Washington Browne, who read a short paper on their history. Time did not permit of the party visiting Cambuskenneth Abbey, so, after dining in the Golden Lion Hotel, they returned to Edinburgh.

Manchester Society of Architects. — The Manchester Society of Architects offers the following prizes, to be competed for by such draughtsmen as may be eligible, and by students serving their apprenticeship in the offices of architects in Manchester, or in the office of any member of the Society, viz.: a first prize of five guineas, given by the Society, and a second prize of three guineas, given by



Capitals from the Wall Arcade, "Angel Choir," Lincoln.

the President, Mr. Redmayne, for the best portfolio of Architectural Sketches, including figured sketches. Mr. James P. Holden's prize, of the value of five guineas, for the best set of not less than four sheets of drawings of a good example or examples of Classic architecture, made from the actual building or buildings, with a short description of each subject. Further particulars, and conditions, may be obtained of the Honorary Secretary of the Society.

CAPITALS, LINCOLN CATHEDRAL.

THESE drawings of four of the beautiful Early English capitals in the choir of Lincoln Cathedral are reproduced from sketches by Mr. W. H. Bidlake, made on his tour last year as "Pugin Student" of the Institute of Architects.

EXAMPLES OF JAPANESE WORK.

WE are enabled to illustrate a few of the objects in Mr. Ernest Hart's collection of Japanese art which was on view last month in the rooms of the Society of Arts. One great advantage this collection possesses over many others is that it is arranged in something like chronological order, with date and name of the artist or school attached, and the student desirous of specific information stands some chance of having his desire satisfied. Too many collections of Japanese curios are simply a miscellaneous gathering of good and bad examples, ancient and modern reproductions made expressly for the English market, with little or no information about any of the objects. In fact, Japanese works too often are treated merely as curiosities, and it is only here and there that we find a collector who has gone to the trouble of classifying his collection. One great obstacle that has stood in the way of many collectors is the difficulty of reading Japanese characters, but Mr. Hart has been fortunate in securing the help of a Japanese expert, whose aid has been invaluable. Skilful workmanship is in part at least hereditary, and we find in Japan "schools" of work, or, in other words, families who have for generations devoted themselves to the production of one kind of work. Knowledge and skill are thus accumulative, and by this means a *general* proficiency is reached, whereas, with the individual system, we only get great excellence in specially-gifted persons, the general level of excellence being proportionately low, as in our own case. But the Japanese are breaking with all their old traditions and customs, and in the space of a few years have thrown their ancient civilisation to the winds, and in its place have taken a rather cheap "Brummagem" thing, and this means an end to their own beautiful characteristic work. When they at first broke with the past the Japanese shipped their work over to Europe without a moment's hesitation, where they found a ready sale for "curios," as they were generically termed, and in those times collectors had a good opportunity of buying the best, cheaply; but the Japanese themselves have taken to collecting their old choice work, and it is now no longer possible to buy good work at a low price. The Japanese have taken to manufacturing sham old work for the European market; and collectors had best be wary and on their guard, for, like the "Heathen Chinee," the Japanese are a match for most Western people in "business." Of the objects illustrated here, fig. 1 is a bronze carp. This fish, which often occurs in Japanese work, is held by the Japs as typical of endurance. Fig. 2 is a bronze figure of religious character. Fig. 3 is a beaten war-mask of hard iron of ancient manufacture, and is consequently a most difficult class of work to produce. It is made so that the nose and mouth parts can be detached so that the warrior could feed. Fig. 4 is a fine specimen of old bronze casting; cheap reproductions of this are often seen. Fig. 5 is a serpent in the act of attacking a frog. The original is a very fine piece of casting. Figs. 6 to 11 are knife-handles. The subjects of the decoration are sometimes religious, sometimes humorous, and at other times mere quaint conceits.

Fig. 1.

Fig. 4.

Fig. 5.

Fig. 2.

Fig. 3.

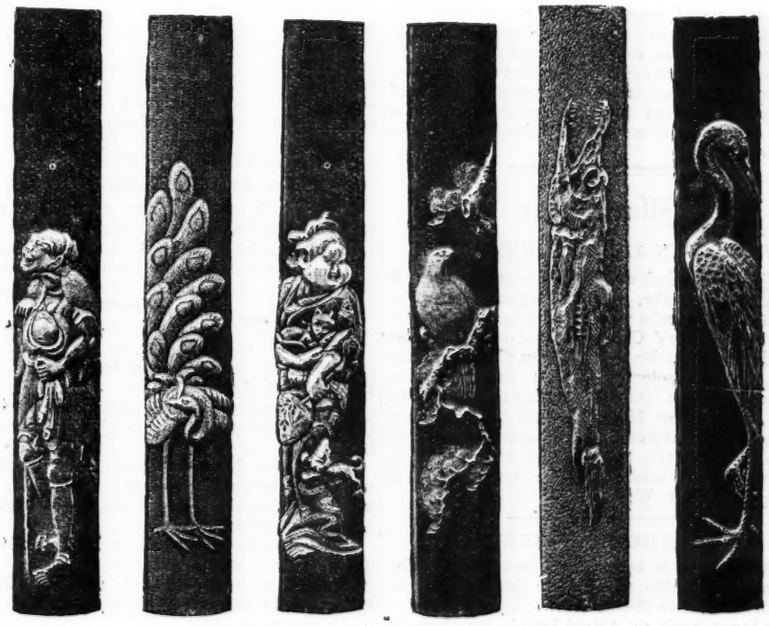


Fig. 6. *Fig.* 7. *Fig.* 8. *Fig.* 9. *Fig.* 10. *Fig.* 11.

JAPANESE WORK: FROM THE COLLECTION OF MR. ERNEST HART.

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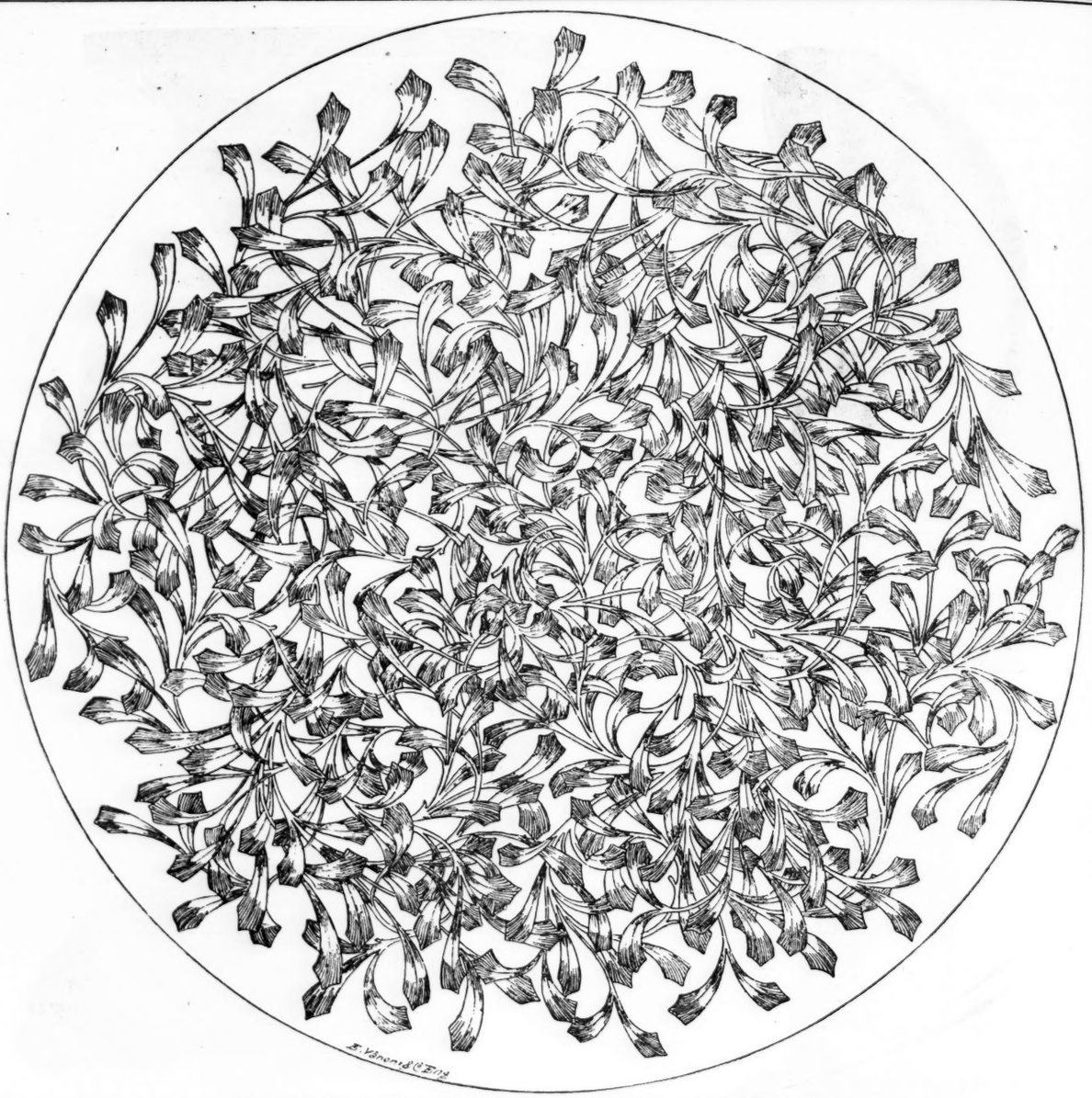


Decorative Panel: Conventional Treatment of Mistletoe. By Mr. F. T. Piggott.

DECORATIVE PANEL.

THIS panel represents a conventionalised treatment of mistletoe, the design of Mr. F. T. Piggott. It was exhibited some time since in the architectural room of the Royal Academy, when we noticed it as a very good example of decorative design founded on foliage forms. The original is in colour, with the stems of the leaves gilt.

Illustrations.

WINDOW IN THE BUTCHERS' HALL.

FIVE windows, by Messrs. Lavers & Westlake, — four representing the monarchs who have granted charters to the Butchers' Company, and one the arms of that corporation,—have been placed in their hall in Bartholomew-close. The monarchs represented are James I., Charles I., George II., and her present Majesty,—this latter window forming the subject of our illustration. These windows are the gifts of Messrs. Venables, Hart, Baker, and Kilby. The window is designed by Mr. Westlake.

STATUE OF BERLIOZ.

THIS statue is intended to be erected in the Square Vintimille at Paris, a few yards from the house where Berlioz died.

It is the work of Alfred Lenoir, grandson of the celebrated architect and antiquary. The statue is rather more than life-size, and has been cast in bronze at the foundry of MM. Thiebaut. The head, which is both very expressive and a remarkable likeness, has been cast, with the hand, on the *cire perdue* system, while the remainder has been cast in the ordinary manner.

The statue, commissioned by a subscription committee presided over by Vicomte Delaborde, is to be erected on a stone pedestal of very simple character, designed by M. Boitte, architect, brother-in-law of the sculptor.

SHOPS AND OFFICES, NEW BROAD-STREET, CITY.

THIS block of buildings occupies a commanding position in New Broad-street, in close proximity to the termini of the Great Eastern and North London Railways, and opposite the Bishopsgate Station of the Metropolitan Railway.

The façades are constructed of Portland stone, with polished granite work on the ground story, and have a frontage to New Broad-street of about 220 ft.

The accommodation comprises six shops (some of which are sub-divided), with extensive basements.

The upper floors are arranged for offices, which will be divided to suit tenants, and, with very few exceptions, every office will overlook New Broad-street.

The entrance to the offices is planned to be quite distinct and apart from the shops, and comprises a boldly-treated arched opening, relieved with polished granite, conducting to a lobby and vestibule.

There are two stone staircases communicating with corridors on each floor, the walls being lined with tiles, and the floors laid with mosaic.

The whole of the works have been carried out for the Broad-street Syndicate, under the superintendence of the architect, Mr. F. Adams Smith.

The contractors are Messrs. Wm. Brass & Son, and Mr. Thomas Bennett has acted as clerk of works.

ALL SAINTS' CHURCH, WALSOKEN.

THE three pages of measured drawings of this fine church are reduced from larger drawings by Mr. A. G. Adams, who was awarded a Medal of Merit for the originals last year by the Royal Institute of British Architects. Some notes on the church will be found in our first article this week.

ANGLESEY HOUSE, CARSHALTON.

THIS house, now in course of erection for Mr. J. Gibbs, is situated on Bandon Hill, with good views of the surrounding country. There is nothing very special about the construction. The walls are faced with local stock bricks, with Ham Hill stone dressings. The roof is constructed on the plan suggested by Mr. Ralph Nevill at the Institute last session, the rafters being lathed and battened, and covered with silicate breeze concrete, 1½ in. thick and the slates, which are Eureka slate nailed to the concrete. It was found necessary to introduce the slating battens, as the slates were found to drop slightly without them when the nails touched a small grain of breeze in the concrete; but with the batten the point of the nail just catches and holds the slate in position till the concrete is quite set. It makes an excellent roof, and is especially good for circular work. The work has been carried out by the builder, Mr. E. J. Burnand, of Wallington, Surrey, from the designs of Mr. Herbert D. Appleton.

"INK-PHOTO" SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

WINDOW IN THE HALL OF THE BUTCHERS' COMPANY, LONDON.

EXECUTED BY MESSRS. LAVERS & WESTLAKE.

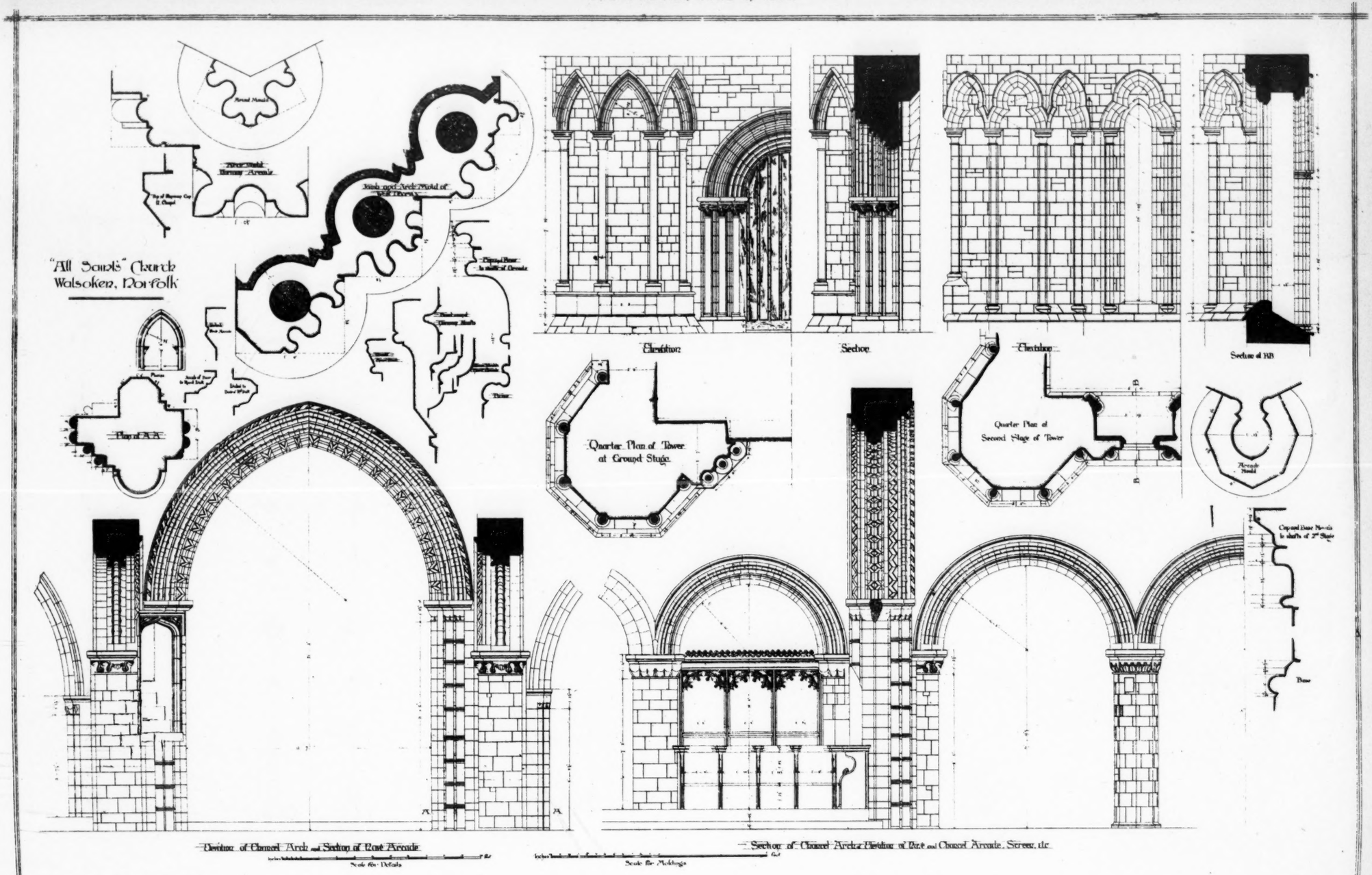
"INK-PHOTO," SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

STATUE OF BERLIOZ: TO BE ERECTED IN PARIS.

M. ALFRED LENOIR, *Sculptor.*

K.E.RANDALL
33
T.E.KENT
32
W.&A.ISAACS

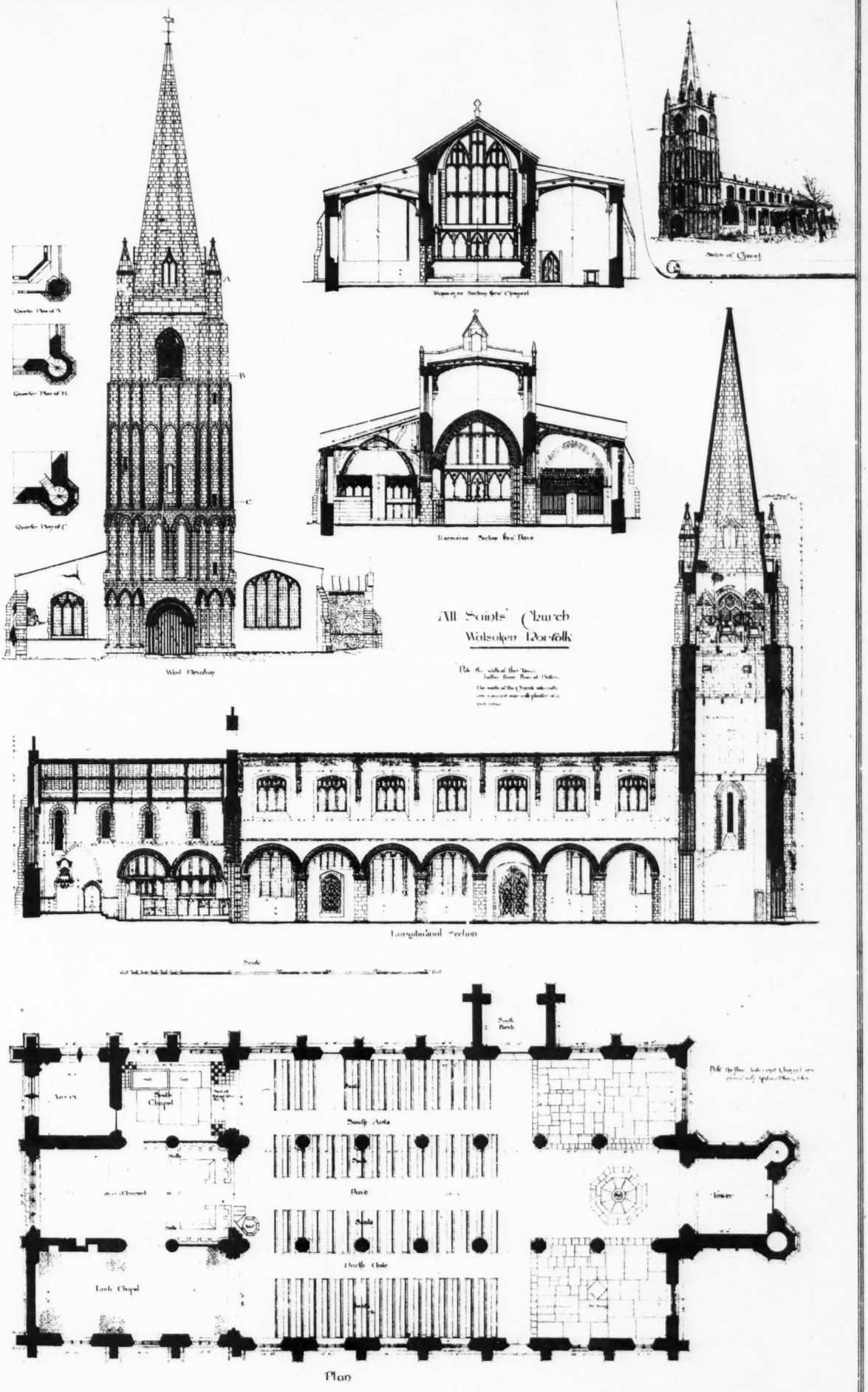
PHOTO-LITHO. SPRAGUE & Co. 22, MARTINS LANE CANNON ST. LONDON, E.C.


"All Saints" Church
Walsoken, Norfolk
Plan of A A
Elevation
Section
Section of BB
Quarter Plan of Tower at Ground Stage
Quarter Plan of Second Stage of Tower
Elevation of Chancel Arch and Section of East Arcade
Scale for Details
Section of Chancel Arch Elevation of East and Chancel Arcade, Screen, etc
Scale for Moldings

Wyman & Sons, Photo-Lithe

C^t Queen S^t London, W.C.

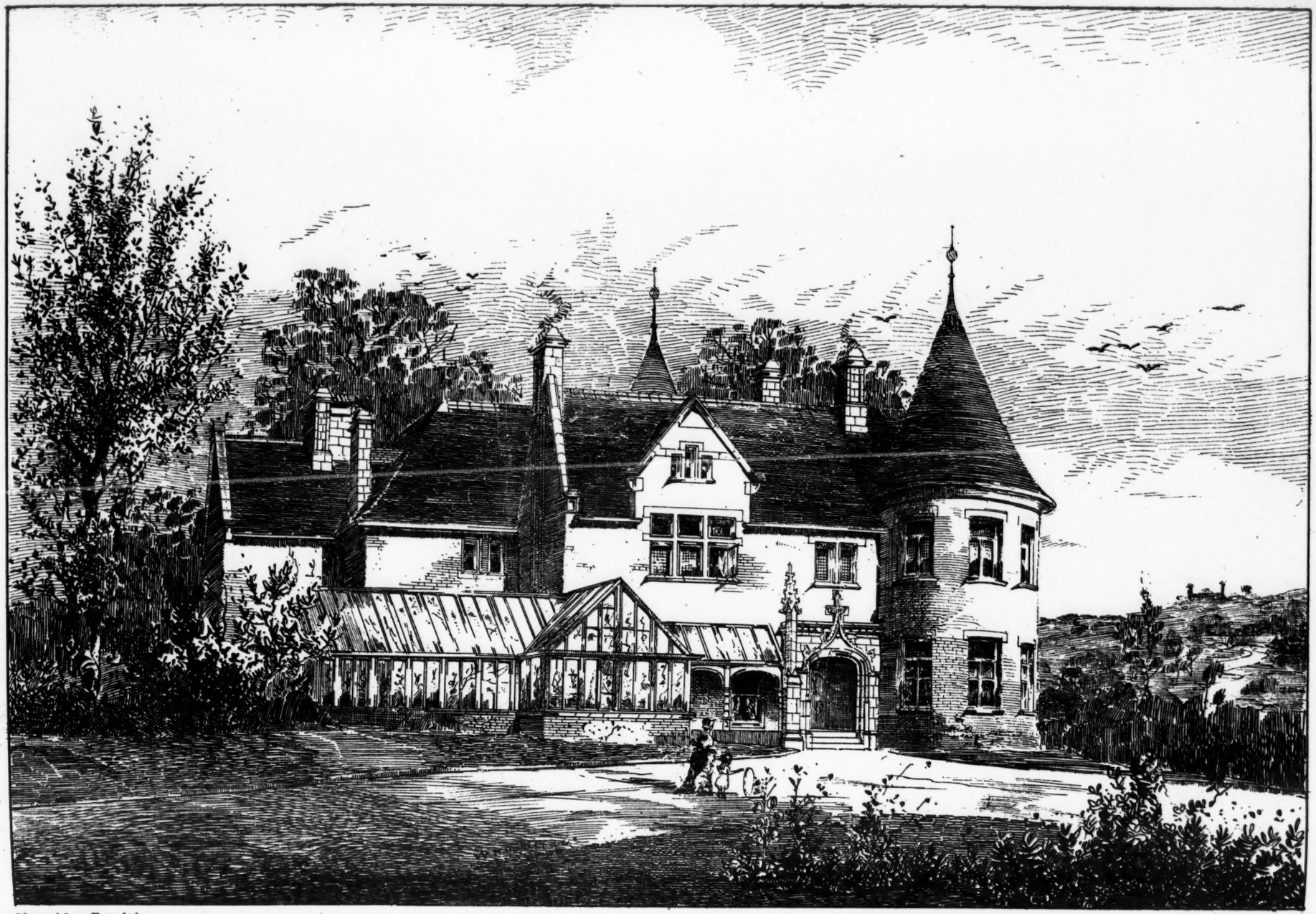
ALL SAINTS' CHURCH, WALSOKEN, NORFOLK.——Drawn by Mr. A. G. Adams.



Wyman & Sons Photo-Litho

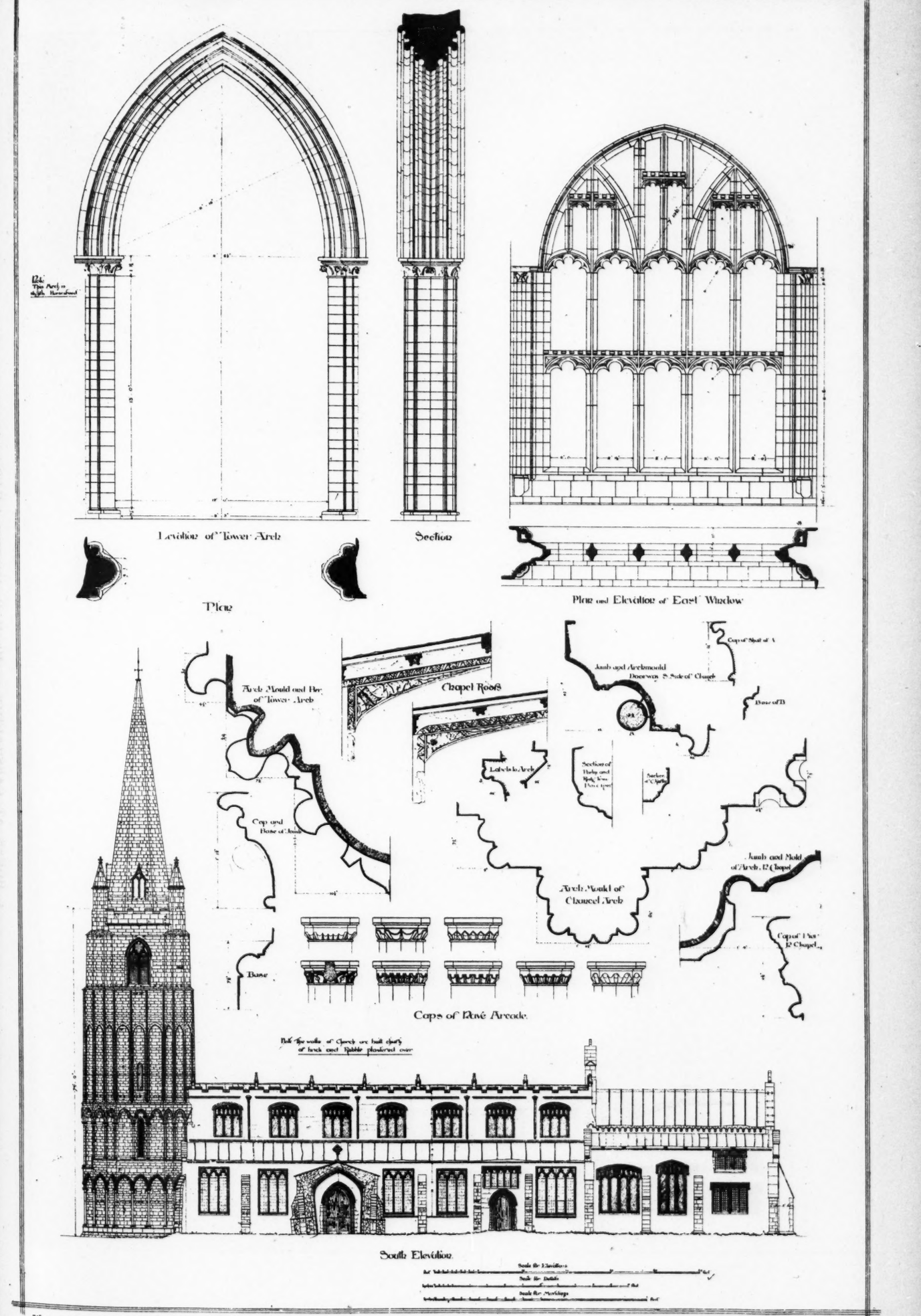
C^t Queen S^t London W.C

ALL SAINTS' CHURCH, WALSOKEN, NORFOLK.—Drawn by Mr. A. G. Adams.



Wyman & Sons, Photo-Litho. C^t Queen S^t London, W.C.

A HOUSE AT CARSHALTON.—MR. H. D. APPLETON; A.R.I.B.A., ARCHITECT.


Elevation of Tower Arch
Section
Plan
Plan and Elevation of East Window
Chapel Roofs
Arch Mould and Pier of Tower Arch
Cap and Base of Shaft
Label to Arch
Jamb and Arch mould Doorway S. Side of Chapel
Cap of Shaft of A
Base of D
Arch Mould of Chancel Arch
Jamb and Mould of Arch to Chapel
Cap of Pier to Chapel
Base
Caps of Piers Arcade
South Elevation

Wyman & Sons, Photo-Litho. 74 Queen St London, W.C.

ALL SAINTS' CHURCH, WALSOKEN, NORFOLK.——DRAWN BY MR. A. G. ADAMS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE tenth ordinary meeting of the present session was held on Monday last, Mr. Edward l'Anson, F.G.S. (President), in the chair.

The New President.

The President.—As this is the first time I have been able to preside at one of our ordinary meetings, since you did me the honour to elect me as your President, I take this, the first opportunity which has occurred, to offer to you, gentlemen, my warmest thanks for having placed me in this very distinguished position. And you will better be able to understand how very highly I appreciate this honour, when I tell you that I felt very uncertain whether you would concur in conferring it upon me, because I feared you might think the large amount of attention and time I have bestowed on that branch of our profession which appertains to surveying might have so far estranged my mind and thoughts from the study and consideration of the more noble art of architecture that you might have hardly felt I was the right man to represent you as President of the representative body of architects. Therefore, I do feel grateful and especially proud of being the President of the Royal Institute of British Architects; for my ambition,—my sole ambition,—throughout life has been to be an architect. From the time,—since about 1830,—when I was admitted a student in the Antique School of the Royal Academy, through an exceptionally long and very arduous professional career, the study of our art has never been laid aside, and all my leisure time has been devoted to it. And as a proof, I may venture to remind you that in 1837 I was the first to call attention at one of our weekly meetings to the restoration of the Temple of Victory Apteros at Athens, to exhibit measured drawings of the same, and a perspective in the Royal Academy; that I have notably been the means of calling your attention to, and making generally known, the then almost, if not entirely, unknown remarkable Mediæval works erected during the time of the Lusignan dynasty in the Island of Cyprus; that I have also called more full attention to the architectural monuments in the Kremlin of Moscow and Central Russia; as also to the remarkable Cathedral of Trondjeim in the north of Norway, than had before been done; thereby evincing,—I trust you will feel,—that although I have largely practised as a surveyor, I have never ceased to be a student in that school to which I was admitted more than half a century ago. Again, gentlemen, I thank you very sincerely for the distinguished honour you have conferred on me. (The President's remarks were received with applause.)

Miscellaneous Communications.

Mr. William H. White (Secretary) announced the death, on the 22nd of May, of Mr. Richard Kyrke Penson, Fellow, one of the elder members of the Institute.

The Secretary also announced that a dinner was being held that evening at the Hôtel Continental, Paris, by the French architects, in honour of M. Charles Garnier. The dinner, in the words of the communication he had received, was pour "fêter la grande médaille de la Reine d'Angleterre."

Professor Kerr.—Perhaps you will allow me to say a word with regard to the decease of Mr. Penson, who was a singularly accomplished and amiable character. Very few members of the profession would suppose that a man hailing from a remote town in Wales could have been so accomplished as Mr. Penson undoubtedly was. He was a gentleman in every possible sense of the term, being a country-gentleman I may say, by birth, certainly by education, and in manners most clearly so. I am sorry to hear of his decease, and I am sure you, gentlemen, will bear with me in paying this slight compliment to his memory.

Mr. John Hebb.—I have been asked by Signor Boni, who was lately elected an Honorary and Corresponding Member of the Institute, to thank the members for the honour they have done him, and at the same time to present some pamphlets which he has lately written on subjects connected with the history of Venice and its buildings, with a small piece of a pile which formed one of the foundations of the Arsenal. I may be allowed to say that Signor Boni is a man of exceptional ability and of considerable erudition, and that not only has he a knowledge of the dead languages, but also a remarkable acquaintance with several living languages, speaking also very good English. He apologises for the length of time that has elapsed since receiving the notice of his election, but explains that he has been away. He sends only so many of his works as are in print, and promises that several others, which will probably be reprinted, shall be at the service of the Institute. He also says he has lately found two contracts for the building of the Ca'd'Oro at Venice, which he considers will be two of the most interesting documents illustrating the history of building in that city.

Mr. George Aitchison, A.R.A.—As I have had the honour of knowing Signor Boni for a good many years, I can endorse all that Mr. Hebb has said about him. I think we have been extremely fortunate in enrolling a man who is so devoted to his profession, who has so enlarged a knowledge of antiquities, and who takes such an immense interest in the particular features of the historical portion of the architecture of Venice. I may add that Signor Boni is one of the descendants of the builders of the Ducal Palace.

On the motion of the President, a cordial vote of thanks was passed to Signor Boni for the works he had sent.

Japanese Architecture.

A paper, entitled "Further Notes on Japanese Architecture," by Mr. Josiah Conder, was then read by his brother, Mr. Roger T. Conder. The following is an abstract of the paper:—

The author, after referring to his previous paper on the same subject,—communicated in March, 1878,*—alluded to the curious mixture, in the buildings of the Riobû Shintô style (as shown by illustrations of the temple of Miyo-Jin, Kanda-Tokio), of the simplicity of the early Shintô faith with the ostentatious display of the ordinary Buddhist temples. The oldest existing Buddhist temples differ but little in style from the most recent structures. Historical records assert that the early wooden Buddhist temples of Japan were erected under the direction of Chinese priests, leaving us to suppose that their work was gradually modified to suit the tastes of the Japanese. The planning of the Japanese temples is remarkable for the importance given to their approaches and landscape surroundings, and for the isolated arrangement of the group of accessory buildings, as exemplified in the plan shown of the mausoleum of Iye-yasu, at Nikko. The author then proceeded to describe generally the construction and details of ornamentation of an ordinary temple, considering such a building as a model of Japanese architectural art. These buildings vary greatly in size. The temple at To-dai-ji, at Nara,—a two-storied building, containing a statue of Buddha, 53 ft. in height,—measures 290 ft. long by 170 ft. wide, by 156 ft. high; that at Miyo-Jin, Kanda-Tokio, measures 66 ft. by 27 ft., by 40 ft. high to the ridge. The standard of measurement employed by the Japanese builders is the "ken," which is divided into twenty-two minutes, each minute being divided into twenty-two seconds. The "ken" in common use is understood to be six Japanese feet, or "shaku," the "shaku" being 11·93 English inches. The mats with which the floors are covered are always one "ken" long, one half "ken" wide. The "ken" is taken as the standard of measurement of the detached pillars, and of the pillars and parts of the wall enclosures. The wall-posts are framed into a large horizontal sill, the wall space above being subdivided by horizontal timbers, halved on to them. Diagonal bracing or strutting is nowhere to be found. Detached pillars are square or circular, the circular ones being often reeded, and the square ones moulded on the edges; the lower ends rest upon flat stones or bronze moulded bases; the tops receive a square block of wood, generally consisting of a square and hollow. The principal façade is filled in one, two, or three compartments, with hinged doors, which are generally left open, and through these openings the light for the interior is principally obtained, windows, as we understand the term, being rare. An elaborate cornice of wooden bracketing crowns the walls, forming one of the principal ornaments of Japanese buildings. A very important feature of the façade is the portico covering the main entrance steps, covered by gable roofs of various forms, having a considerable projection, and being often richly ornamented. The forms of roof used to cover the main building are various, but the general appearance of the ends is usually half hip and half gable. Heavy ribs of tile cresting, with large terminals, are carried along the ridge, hip, and along the slope of the gable, set some little distance back. The result of the treatment is very picturesque, and has the advantage of looking equally well from any point of view. A slight tilt is given to the corners of the roof, so that the eaves curl slightly upwards towards the ends. The interior arrangement of wall columns, horizontal beams, and cornice bracketing corresponds with that on the outside, the top beam of the bracketing supporting a panelled ceiling. The wood employed in these temple buildings is usually the native elm, called "keyaki," which is often left quite plain, without colour or paint of any sort. The ends of the timbers are protected by brass caps, and ornaments of the same material are added to the points where beams and pillars intersect, and to cover joints of timbers. Colour decoration, applied to the exterior of the building, has several grades or degrees of richness. The ruder kind of decoration consists of a coating of red (oxide of iron) or black (Indian ink), mixed with animal size. The common red is a raw, harsh colour inclining to orange, but the real vermilion red, made of vermilion mixed with size, or with lacquer, to be seen at Nikko and elsewhere,—is a deep, rich colour, slightly crimson in tint. For portions very much exposed to the weather, black lacquer is used. The application of colour decoration to exteriors commences generally with the lintels or ties, near the top of the posts or pillars. From this height, the different beams and brackets, together with the flat spaces and raised carvings between, are diapered, arabesqued, and variously picked out in bright colouring and gilding. Such a treatment imparts a light elegance to the otherwise ponderous eaves of the Japanese buildings; and the deep sun shadows, beneath the massive projections, assist in subduing and harmonising the bold contrasts of colour employed. The interiors of the principal sanctuaries are also in most cases elaborately coloured, the columns and posts in such a way as shall not be detrimental to their appearance of vertical strength, the horizontal beams in light colours, or in deep colours relieved by an abundance of white and gilding. The recessed spaces between beams and lintels, and between the cornice bracketing, are filled in with elaborate carvings, which are pierced if in internal divisions. The ribs of the coffered ceilings are generally lacquered black with gold lines on their edges, the enclosed panels being filled in with richly-coloured decorations. It is this decorative perfection, this application of the arts of painting and carving to the constructive arts, which imparts the great charm to Japanese structures, a charm of endless variety amidst perfect harmony. As the foster-mother of fine art, the Japanese style of building can lay special claim to rank as an important architectural style. The author then referred to the various accessory temple buildings, to the bishops' palaces, and the monasteries. The accessory buildings are usually the gateways, the font sheds used to cover the holy water basin, the belfries, the drum towers, the storehouses, and the pagodas; the latter, usually of five stories, contain shrines or wooden images in their lower stages, the upper serving no purpose but that of a belvedere; they average 150 ft. high, and are the only Japanese buildings which have sufficient height to assert themselves from any distance.

* See *Builder* for that year, pp. 238, 263, 386.

Mr. G. A. Audsley, in opening the discussion, expressed the pleasure he had experienced in listening to Mr. Conder's most interesting paper. The great glory of Japanese architecture was its marvellous system of carving. Prior to the sixteenth century he believed that little carving was applied to the temples or private buildings of Japan, but at the close of that century was born the famous Japanese left-handed sculptor who was practically the founder of the modern school of Buddhist architecture. Previously to that time there was little carving to the outside of the temples; but this carpenter,—for such he really was,—endowed with great genius and skill, apparently struck out the idea of employing carving for the beautification of the temples, and of applying it wholesale as a system of

decoration. The photographs showed how marvellously skilful this carving was, and the only blunder he had been known to make was in a temple at Nikko, where two elephants were to be found carved with their legs jointed the wrong way. Probably he never saw an elephant. From the time of this great carver, till the decay of Buddhist architecture, Japan seemed to have poured forth one endless mass of carvings, marvellous not only for their dexterous manipulation, but also for their beauty of design and appreciation of the works of nature. Flowers, birds, fish, waves, and waterfalls, were all treated in a manner which was perfectly decorative, and seemed to have grown into their place rather than to have been carved. It was a system of decoration which obtained nowhere else, it was special to Japan, and it raised Japanese architecture to the dignity of being one of the great architectures of the world. The Japanese had never indulged in stone architecture, except for the basements of their buildings, on account of the frequency of earthquakes. Mr. Audsley concluded by moving a vote of thanks to the writer of the paper.

Professor T. Roger Smith, in seconding the vote of thanks, remarked that he had the pleasure both of relationship and of intimate friendship with Mr. Conder. The paper was a very good illustration of the way in which a man who found himself in a foreign country, with objects of interest before him, might serve a great many of his countrymen at home. Mr. Conder's business in Japan was not to study the native architecture, but to teach the young Japanese something of the architecture of Europe, and to practise in styles very different to those they saw before them in the drawings on the screen. Mr. Conder appeared, however, to have taken the opportunity of minutely studying the buildings of the native architects, and the record of his work would be sufficient to show any of the members who might visit Japan what they should look for, and should render the works of Japanese architects much more intelligible. The architecture of Japan struck him as showing an extremely complete style. Mr. Conder had put before them the whole anatomy of the temples and their decorations, and had afforded a glimpse of a complete style entirely different from anything they had to deal with. As was pointed out by Mr. Audsley, the architecture of Japan was essentially a timber architecture, but its decorative side had been carried much further than we in Western Europe had ventured. A great deal might therefore be learned from the success of Japanese architecture in the way of decoration. He could not but hope that a careful study of Japanese art in many ways might stimulate us, not to put these decorations into our own buildings, for that would not be learning the lesson of consistency, but to increase the amount of colour decoration and carving, so as to make our interiors far more splendid and rich than they hitherto had been.

Mr. R. Phené Spiers remarked that he had been asked to look through his collection, by Mr. Conder, to see if he could supply any further illustrations of architectural subjects. He had, therefore, looked out a few books, and it was interesting to note that one of the greatest artists of Japan had not considered it beneath his dignity to include in two of his works a number of drawings of architectural models. In the course of inquiry he found that in the ninth century there existed a celebrated man, called Hidano-Takuni, who laid down laws which had regulated Japanese architecture to the present day. Those laws were not laid down in writing, as were those of Vitruvius, but were handed down by tradition; and, although there were no works which represented the ideas of that celebrated man, still, temples which had been built from the instructions he gave, had, when in a bad state and ready to fall down, been re-built in exactly the same form and with the same decoration and details. It would appear that in the sixteenth century these temples were further enriched by carving and painting, but that would not alter their main form; and from the apparent regularity of disposition, and the scheme of setting out the number of feet between the different posts,—all this must have been laid down by some great man at an early period, and the tradition might have descended to later times. One of the characteristic features of Japanese architecture was the use of timbers which, through some freak of nature, were not straight. These, in England, would, generally speaking, be rejected, but the Japanese delighted to make use of an irregularity of nature. Consequently, in some of the buildings these twisted timbers were to be found turned to good account, and rendered most picturesque features. This Hidano-Takuni was also said to have invented a method to prevent lofty pagodas being overturned by earthquakes. He is said to have found that if from the top of a lofty pagoda a huge baulk of timber was suspended, its oscillation would keep the pagoda from being blown down. He understood, however, that Mr. Conder had never found the timber left free.

Mr. Aitchison, A.R.A., said that photographs and drawings of Japanese buildings showed that the work was often very beautiful, and a rather fine effect was produced by the number of successive roofs put on the pagodas. With regard to Japanese ornament, over one-half of the modern ornamentation of domestic articles was now founded on the Japanese principle, and it also afforded infinite means of study in regard to colour. He hoped that Mr. Conder, or some co-adjutor, would be able to transmit to the Institute the drawings of some of these old temples, the interiors of which were said to be some of the most splendid specimens of colouring the world had ever seen. The Japanese Government might be induced to have diagrams made of some of their finest temples, which were said to be virtually going to decay, or her Majesty's Government might be memorialised to send out artists to make some kind of delineation of them, so that those triumphs of colouring might not be lost to England and the world.

The vote of thanks was then carried by acclamation.

Mr. Roger T. Conder, in returning thanks on behalf of his brother, referred to the question which had been raised as to the pagodas. He also read a letter on the subject addressed to his brother by a Japanese professor of architecture, who had examined a great many of these structures, and who stated that the assertion as to the central swinging post could not be invariably true; that there might be some examples of it; but that he had never been fortunate enough to meet with one; and that he believed it was never intended that the post should swing.

The proceedings then terminated.

THE ROYAL STAND, EPSOM.

THE first new additional building has been erected at the west end of the old Grand Stand, and consists of a large saloon, 50 ft. by 36 ft., with arched ceiling, the cornice and frieze being carried by pilasters with carved Corinthian capitals, the total height of the room being 22 ft. At one side of the saloon there is a wide refreshment-bar; a portion of this room is partitioned off for the use of the Telegraph department, and a pneumatic tube is placed here, in connexion with the instrument-room, so that the general public using the Grand Stand can send their messages without going outside the building. The room is lighted by large windows at one side, in addition to a ceiling-light. Between the saloon and the course, lavatories and other conveniences have been erected for the use of the general public using the Grand Stand, thus adding greatly to the comfort of visitors. Running past the Grand Stand and the saloon, a wide passage has been made leading to the lawn, with a new staircase at the north-west corner of the Grand Stand. This staircase facilitates the gaining of the second balcony, which will mitigate the crush at the other entrance. Beyond the saloon, which may be considered as an integral part of the Grand Stand, is the vestibule and entrance to the Royal and Club Stand. The entrance-hall is 32 ft. by 24 ft., the approach to it from the vestibule at the entrance being cut off by an arcaded screen, constructed of buff terra-cotta; the two arched openings on either side are filled with stained glass. The walls of the entrance-hall are tiled, with a brown majolica dado, black tile skirting and capping. This is continued round the screen to form the base of arcade. Above, the walls are covered with cream-coloured tiling. The hall is partly lighted by two ceiling-lights, filled with stained glass, the design and colouring of which are Indian in style, the ceiling being panelled, with moulded cornice and enriched frieze. From the entrance-hall a stone staircase runs up through the building, giving access to the balconies and standings. The staircase is lighted and ventilated by windows on the landings, and by a lofty lantern-light, rising to a height of 70 ft. from the ground, and surmounted by an iron grille, in the centre of which a lofty flag-post is erected. The dining-hall, a fine and spacious apartment, 50 ft. by 40 ft., and 18 ft. high, is to the right of the entrance-hall. The walls are relieved by fluted pilasters having Ionic caps carrying the frieze and enriched cornice, moulded panels being formed between the pilasters, with a dado carried round the room; the ceiling is panelled, with moulded ribs. Two refreshment buffets, with mahogany and walnut fronts and marble tops, are placed at the end of the room, and a doorway leads to the kitchen and large store-rooms. At the back, a dinner-lift runs from the basement, and communicates with the Jockey Club luncheon-room and the Prince of Wales's rooms.

The rooms for the use of their Royal Highnesses the Prince and Princess of Wales consist of sitting-room, 20 ft. by 16 ft. and 11 ft. high, lighted by three windows, overlooking the course. The ceiling is enriched by a raised geometrical pattern in plaster, and a decorative frieze and cornice surround the room; the dado is formed of Lincrusta-Walton, with moulded capping. The mantel-piece is of wood, with carved over-mantel and tiled hearth. The lights to windows are filled with stained glass, designed in the Renaissance style. A private staircase, for the exclusive use of H.R.H. the Prince of Wales, leads to the Jockey Club room. The luncheon-room is 24 ft. by 16 ft., and adjoins the sitting-room; the decoration is similar in all respects, except that the general treatment is varied. A servery is placed at the back of the luncheon-room, and communicates therewith. The Princess's retiring-room is entered from the sitting-room. The walls are tiled, with a majolica dado, dark border and skirting, and French grey tiling above.

Adjoining the Club Stand, still to the west, come what may be called the rooms devoted to the actual business of racing, being the jockeys', press, telegraph, and weighing rooms, and the room for the clerk of the course. The press-room is a very comfortable apartment, 16 ft. by 30 ft., with a flight of stairs leading immediately from the room to the reporters' balcony. At the back of this balcony, which is about 36 ft. long, are the lavatories, cloak-room, and other conveniences set apart for the use of the press. Another great improvement upon the ordinary location of the telegraph will be a short passage leading from this balcony and communicating directly with the large instrument-room behind. This room is 36 ft. by 36 ft. and 18 ft. high, with an open-timbered roof, which is stained and varnished. Accommodation is provided for 100 telegraphic operators. On the ground-floor there are two telegraph-rooms, one for the use of the Grand Stand public, the other for the use of the general public. The new Club Stand is a very commodious structure. Although it is not so high as its larger neighbour, the Grand Stand, it has the same length of frontage. The first balcony is partly reserved for the use of the members of the Jockey Club, and partly for those of the members of the New Club, which will be limited to about 700 members. Over this, again, is the second or royal balcony.

The whole of the work has been carried out by Messrs. Colls & Sons, builders, London, from the designs and under the superintendence of Mr. J. Hatchard Smith, architect, Moorgate Station Buildings. The stained glass is by Mr. F. A. Oldaker; the enriched ceilings are made of Messrs. Jackson's fibrous plaster; Messrs. M. T. Shaw & Co. supplied the ironwork; the terra-cotta screen is by Messrs. Doulton; Lascelles's concrete has been used throughout for landings, pavings, &c. The buildings are enclosed by a flint wall with large stone gate-piers; the gates are of wrought iron with a shield. Mr. French has acted as clerk of the works. The buildings have cost about 11,000*l.*, and the work has been completed in six months, notwithstanding the severity of the winter.

British Museum.—Mr. John A. P. MacBride delivered his third lecture (subject, "Early Greek Sculpture") on Tuesday last. The next, on Pheidias, will be given on Tuesday next, at half-past two precisely.

THE CONSTRUCTIVE TREATMENT OF CONCRETE.*

THE first use of the word "concrete" probably (as Mr. Geo. Godwin supposes) dates somewhere between the years from 1815 to 1820, and has been derived from the Latin word "*concrescere*," to "grow together." As that idea is involved when we use the word "concrete," the writer of this paper proposes to use the expression "exstruction of concrete," when "building up concrete" is meant; because to speak of the construction of concrete, *i.e.*, the putting together of a thing that grows together, seems rather absurd, and, therefore, the exstruction or building-up of concrete would be a happier term.

Not a few works have been written upon concrete; but the three principal that are likely to be of use to those interested in this paper are "The Nature and Properties of Concrete," an essay by Mr. Geo. Godwin, published in the Transactions of the Institute of British Architects for 1835, vol. i., p. 1; "Concrete as a Building Material," a paper read by Mr. Alexander Payne before the Institute of British Architects on the 10th of April, 1876, which, together with its discussion by many eminently-practical men, was continued on the 15th and 29th of May of the same year, and will be found in the "Transactions" of that Institute; and, lastly, a small book by Mr. Henry Faija, entitled "Portland Cement for Users," published in Weale's Series of Technical Works.

Allowing that it is entirely within the province of the chemist to say whether limes or cements are the more suitable for certain classes of work under other than ordinary conditions, as, for example, marine work, in speaking of which M. Poirel (in his "Mémoire sur les Travaux à la Mer, comprenant l'Historique des Ouvrages exécutés au Port d'Alger, et l'Exposé complet et détaillé d'un Système de Fondation à la Mer au Moyen de Blocs de Béton") says that "he believes that none of the Roman cements are capable of resisting the destructive action of the salts contained in the sea water, and he has no doubt but that all the English harbour works executed in Portland cement are doomed to more or less speedy destruction. For the last fifteen or twenty years the use of the Roman *pozzuolana* has been abandoned in France, and the concrete employed for marine works has been made with lime from Theil, a village in the department of Eure, fifteen miles from Louviers. It was used exclusively at Algiers, London, Marseilles, and the harbour of Saida. The future will show whether these blocks will resist the action of sea water as well as those of which Roman *pozzuolana* is an ingredient." M. Poirel regards this as the only material capable of forming a perfect concrete for marine works. It is certain that for the ordinary purposes of walling and such-like, 1st, the setting or hardening of lime concrete is not uniform throughout the mass; 2nd, owing to its low tenacity, its surface (and, therefore, the arrises) is liable to injury; 3rd, expansion takes place in the concrete during the slaking of the lime, and in some cases local expansion, or, what is technically known as "blowing" takes place in the mass; 4th, lime-concrete is not impervious to moisture, as is Portland cement concrete; and lastly, it requires a longer time than cement concretes to thoroughly harden, and without a proper admixture of sand will never become hard. Some of these points have been noticed in the "Professional Papers" of the Royal Engineers.

Referring to the tenacity of lime concrete, I will quote from Mr. Faïja's book, "Portland Cement for Users," in which, at p. 50, he says that:—

"The erroneous impression regarding the cost of a cement mortar or concrete, as compared with one of lime, is another point which has hitherto in many cases precluded it from being used; but inasmuch as a concrete or mortar can be made with a very much smaller proportion of cement than of lime, and yet be of greater strength, it becomes a simple matter of calculation which is the cheaper and will still satisfy the requirements of the work.

If an ordinary lime concrete is required to be, say, 12 in. thick to support a given weight, and the proportion of lime to the aggregate be as one to four, an equally strong foundation would be secured by using a cement concrete only 6 in. thick and with a proportion of cement to the aggregate of not more than one to seven or eight, so that there would be a saving, not only in the amount of cement used as against the quantity of lime, but there would also be the saving due to the less amount of labour necessary to produce the smaller amount of concrete. That good concretes and mortars may be produced with a very small portion of cement, and at a very low cost, is shown by what Mr. Bernays has done at Chatham. The proportion he used for the dock walls was one of Portland cement to twelve of river shingle, and he explains that the concrete thus made was cheaper and stronger than the lime concrete, which it was originally intended to use. Mr. Bernays also calculates the cost of a cubic yard of cement concrete, based on ordinary London prices, at

	Yard cube.
	s. d.
12 parts shingle to 1 of Portland cement ...	7 2
9 " 1 " ...	8 2½
6 " 1 " ...	10 3

The cost of a grey lime mortar, as given by Mr. Coulson, the proportion being one of lime and two of sand, is 11·83 shillings per yard cube and its tensile strength at six months 36·86 lb. per square inch.

Comparing it with the three following Portland cement mortars:—

	Cement.	Sand.	Tensile strength. lb.	Cost per yard cube. shillings.
No. 1	 1	 6	..... 103·79	..... 11·56
" 2	 1	 8	..... 68·80	..... 9·93
" 3	 1	 10	..... 50·16	..... 8 83

it seems that cement may be used in the small proportion of one to ten of sand and still be stronger than a lime mortar of the proportion of one to two."

Put in another way, the Portland cement concrete, gauged 1 to 10, is 36 per cent. stronger and 25 per cent. cheaper (for the same bulk) than lime concrete gauged 1 to 2.

"That cement is, therefore, a more economical material for use than lime there can be no doubt, but that it is advisable to use it as mortar with such a very large proportion of sand is somewhat doubtful. It would be found to be so very gritty and unmanageable that a small proportion of loam would have to be added to render it mellow and workable. This would of necessity reduce its strength, and it would, perhaps, be desirable to be satisfied in procuring a greater strength without reducing the cost, as compared with lime mortar."

A concrete is composed of two parts, a matrix and an aggregate, and Portland cement concrete has a matrix of Portland cement, whilst for aggregate almost any material may be used, with a few exceptions.

Portland cement concrete (if made with non-porous aggregates, such as gravel, slag, &c.) is impervious to moisture, and yet, at the same time (if not hydraulically compressed), will take up a sufficient quantity of moisture from the air to prevent condensation upon the surface of such walls as may be built of it. It not only resists the disintegrating influences of the atmosphere, but becomes even harder with the lapse of time. When the material is newly cast it can be cut and carved with great facility. By using different aggregates this material may be made so hard that a nail cannot be driven into it, or sufficiently soft to become a fixing for joinery. It may be made in several different colours, and can be finished off to nearly a polished surface, or can be left quite rough. It will further take an exact impression of the mould in which it sets, because with a "true" Portland cement there is neither expansion nor contraction in setting. Being a bad heat-conductor, it is an excellent material with which to erect dwellings much exposed to extremes of heat and cold. Being also non-porous (when a non-porons aggregate is used) no moisture can get into the walls of a dwelling, and no damp-course is therefore required. Further than this, if there be sufficient gravel upon the site of the building to be erected, it can be used (provided all clayey matter be washed out) as the aggregate; or even if clay be found upon the site, it may be used as the aggregate, provided it be well burned; but this latter would not form a non-porous aggregate. In seaside localities the (salt) shingle from the beach may be used, and sound and dry walls will be obtained. The use of concrete as a material for building will be found to meet all the defects set forth by practical people, as it may be made fire-proof, vermin (large and small) -proof, and nail-proof, which last property will be found to be very beneficial in the commonest class of dwellings, usually occupied by those of our race that have the bump of destruction largely developed. These, then, are the properties of Portland cement concrete.

With regard to the erection of walls in concrete, we have three divisions of our subject,—Firstly, the casing system; secondly, the block system; and thirdly, the slab system.

The Casing System.—This system, no doubt, was that employed by the Romans and in most of the structures of antiquity; for in the walls of the fortress of Ciudad Rodrigo we see the marks of the boards that retained the semi-fluid concrete of which they were formed. This system of building walls is the commonest in use. Two sheetings of planks and boards are formed, and being placed in a vertical position, and with their surfaces parallel to each other, at a distance equal to the thickness of the wall, they are made to contain the semi-liquid concrete, which sets and forms a solid mass between the casings. The casings are not erected of a height equal to that of the wall, but the work is done in lifts, the casings being shifted upwards from the bottom of the work as soon as it has become sufficiently hard to allow them to be removed. The system commonly adopted, however, provides no scaffolding, but a modification of it was made by Mr. Tall, who called it his "bracket scaffolding." In this system the casings were kept parallel by means of tie-pieces passing across the wall, and having shoulders to them, and on the outside of these casings brackets were fixed, to do the same duty as putlogs do in ordinary scaffolding, viz., to support the scaffold. Thus the scaffold was supported by the wall as it progressed. Mr. Drake's casing system consists of an iron apparatus formed of sheet-metal, riveted together in sections and sliding upward between iron uprights that have been fixed "plumb" beforehand. Bolt-holes are left in the work as it proceeds, and by this means brackets are affixed to it for the purpose of supporting a scaffold at the required heights. A derrick, with block and fall, is used to hoist the concrete in buckets. Henley's system is a wood-casing system, the casings being supported by uprights. The casings are, however, pivoted to the uprights, so that by merely reversing each section it may be made to travel upward as the work proceeds. It is not for me to pass judgment on any particular form of the casing system, but I will mention a few of the disadvantages under which the system itself lies. There are difficulties experienced in the introduction of separate courses of moulded work, and also in introducing any kind of heavy ornament upon the face of the work. A good and durable face that will not burst off, and of a good and even colour over the whole work, can seldom, if ever, be attained. Again, the treatment of the face is difficult, owing to the awkward position in which the work is placed for the operation of the workmen; and lastly, it entails an enormous waste of material in cutting the casings to suit the work. I will take the average contractor's price for doing the plain work. It is this:—

External Face of Wall.

	Yard super. s. d.
Use and waste of casings, &c., at 2d. per ft. super.	1 6
Render and float ¾ in. thick with one part of cement to two parts sand, and joint in imitation of stone	2 0

Internal Face of Wall.

Use and waste of casings, &c.	1 6
Render internal face of walls with a thin coat sufficient to fill the interstices in one part Portland cement and two parts sand	1 0

This gives us 3s. for two faces of one yard each. As I am now only dealing with the methods of treating the surface, it is unnecessary for me to take the cost of the filling, as that will cost much about the same wherever it is deposited, and as I wish more to compare the slab system with the casing system, I shall omit comparing it with the block system, which everybody knows is the most expensive of the three.

The Block System.—The block system has been spoken of by several eminent men as no concrete system at all; for they say it is merely a system of using building stones, no matter how those stones have been formed. It works under the disadvantage of having to deal with cumbersome masses of material that could just as well have been used in less bulk; it gives us a wall having all the defects of a stone one, particularly the through joints, which very often allow driving rains and winds to pass along them; and lastly, it takes no account of the monolithic principle which is found to be so beneficial in foundations, and which, applied to the walls, is merely an extension of the foundations upwards. The ordinary block constructions are formed in the same way as those of stone, with the exception perhaps that better joggle-joints and dowel-holes can be formed at a less cost than in stone. For this reason (viz., the less cost for working) also, blocks of special form can be made more cheaply in concrete than they can in stone, and Mr. Beamish, of Queenstown, has made prisms of H, or rather I, section, which are made to tooth into each other, and to form submarine structures. It can be seen that in this system the vertical joints of the blocks are kept together, and the structure can accommodate itself to an uneven foundation. Another form of block is

* From a paper by Mr. F. West, read before the Institute of Inventors on the 17th ult.

that of Mr. Woodhouse, of Bridgwater. Many advantages are claimed for this block, but the chief seems to be that dry walls are ensured by the air-passages formed in the centre of the wall. In speaking of concrete, to urge such an advantage as this is absurd; because, whether the inside of the wall be hollow or solid, no water can pass through the material on account of its impermeability; but if it be intended to show the advantage of the form for a block to be made in any material, it is a good point.* The greatest advance, however, in the block system is the skeleton-block system; and as these blocks are rather of a doubtful classification, I prefer, for the sake of convenience, to put them under the heading of slabs. I therefore now refer to

The Slab System.—Hitherto the great difficulty in constructing walls of concrete slabs has been to prevent the slabs from being forced outwards, or from toppling over by the pressure of the plastic filling-in material from the time of its deposition between the slabs until it has become sufficiently hard to form with the slabs a solid wall. Several devices have been used to obviate this difficulty:—(1) Temporary ties or gauges connecting the slabs forming the two faces of the wall have been used, and these have been removed as soon as the plastic filling-in material has become hard. (2) Permanent ties or cramps, which, as their name implies, have been allowed to remain in the wall, and to be entirely buried in the plastic filling-in material. These permanent transverse ties have been of two kinds: those which were affixed as soon as the slabs were placed in position, and those which were made to form part of the slab during the period of its manufacture, as, for instance, slabs (really skeleton-blocks) of Z or H horizontal section. (3) Slabs of L section (these might also be called skeleton-blocks), vertical or horizontal, and some with a kind of buttress projecting from the back of the slab into the wall, have also been used, as well as slabs having a wide base, and when these have been bedded, or a thin layer of plastic concrete has been deposited between that on the inner and that on the outer face of the wall, and this layer of concrete has become hard, a transverse-tie had thus been formed. Or these same slabs have been used, and a temporary tie has been placed across their upper edges during the time that the filling behind them has been in a plastic state; or else these same slabs have been shored up from the outside of the wall. (4) A casing has been formed by means of the slabs entirely of concrete, those slabs forming the faces of the wall in the unfilled courses being keyed to the slabs below that form the faces of the wall to the filled courses. In this system, therefore, any kind of transverse-tie to be used during the process of construction, or rather of exstruction, is entirely dispensed with, and the courses of slabs above depend solely upon the courses of slabs below them for their stability and rigidity up to the time that the filling-in material has been deposited and become hard behind them.

As the objects of all slab construction are:—(1) To retain and to mould the plastic concrete used in forming the wall; (2) to key or fix the slabs to the mass which they themselves have moulded; and (3) to form a facing to the wall,—it is seen that all the devices mentioned above are not of permanent utility, but are only temporarily required. For when the three objects have been attained there is no need of any transverse tie whatever beyond that which naturally obtains in a concrete wall. I will now illustrate these principles by some examples. The first I mentioned was slabs with temporary ties or gauges. These were generally placed across the upper edges of the slabs forming the inner and outer faces of the wall, and extended down the faces of the slabs to the next course. They could not be relied upon for building a wall plumb, as their angles might have been easily knocked out of square. The second was slabs with permanent ties or cramps. These were buried in the mass of concrete filling, and remained there permanently, because they were placed in such a position that they could not be extracted after the setting of the concrete. Iron ties seem to have been first used, and these were hooked into eyes cast into the slabs, or else into holes formed in them. In Sidebotham's system metal ties are used, but he also uses a transverse tie of I horizontal section, formed of concrete, and each end of this tie fits into grooves in the back of the slab. Drake has a system somewhat similar in principle, but with a little alteration in the form of the ties, and, instead of a square edge to the slabs, has a tongue-and-groove joint. Lish's slabs (or rather skeleton blocks) may be of Z L T or Π (Greek character) form; but his Z form, the only one shown in his specification, is not a happy one, as special slabs must be made for every thickness of wall. The form of the slab forbids its transport, and the awkwardness of moulding forbids its manufacture. It is the same, more or less, with all skeleton blocks. Before mentioning those under the next heading I will call attention to the slab or skeleton block of Lee and Beale. This is of L horizontal section, but as its return end extends right across the wall it must be classed with the permanent transverse ties. It has, no doubt, several good points, as, for instance, the saving of one transverse tie, and also the ensuring of accuracy in building a wall; but, if the cost of producing the slab be gone into, it is too expensive to compete with other systems. Under the third heading I class Lockwood's slab. This is a slab of L vertical section, the foot of the L extending for a short distance into the wall. Only one course at a time can be built up with this slab. It is no doubt a very simple form of slab, almost too simple, because no tie between it and the filling is obtained over a large part of its area, but it obeys the proper principle of slab construction, inasmuch as it can be used for any thickness of wall. It must, of course, be bedded upon each course, and a tie might have to be used here and there across its upper edges.* Potter's is on somewhat similar principles, except that he does not get such a large bed surface, but he improves the key-hold of the slab by forming dovetailed projections, which extend down the slab at each end. These projections are further buttressed inwards, and therefore project farther into the heart of the wall at the lower edge of the slab than they do at the upper. Temporary ties are used with these slabs, and if necessary permanent transverse ties can be formed by simply depositing a thin layer of concrete between those on the inner and those on the outer faces of the wall and allowing it to become hard. In another system of Mr. Drake's the slabs have all been held together by a framework, which is shored up from the outside of the wall, and this has been removed when the slabs have become keyed to the wall. This latter, however, is really a casing system, but without the advantages possessed by that under heading 4; for in this of Drake we have expensive metal tie-rods and bars in addition to the slabs, and also the additional cost of fitting up the slabs to form a casing.

[The lecturer, in conclusion, described his own system of concrete construction, which was described and illustrated in the *Builder* for June 20, 1885.]

Liverpool Exhibition.—Messrs. Maw & Co ask us to mention that they have on view here a collection of specimens of their best work, including examples of "Anglo-Persian" tiles, which are reproductions of ancient examples found in Oriental mosques and palaces, both as regards design and execution, and "relief-enamel" tiles executed in raised enamels on terra-cotta grounds of various shades and colours; these are intended to meet a demand for fireplace tiles not uniformly glazed or enamelled. The same firm also exhibit examples of "Benthall-ware," in which designs, modelled in relief, in red terra-cotta, are enriched by the partial application of colour in enamels; and sgraffito tiles, which are entirely hand-work, and are used in fireplace and wall decoration where cost is not such a consideration as the production of an artistic result.

* Messrs. Parr & Strong are the inventors of a cellular system, as it is called. The blocks are really hexagonal tubes of terra-cotta and other material, containing a filling of concrete. The hexagons tooth into each other to form the bond, and the open ends of the pipes, which show the concrete filling, form the faces of the wall. This is very effective, but a similar face to the wall may be obtained by using the slab system of West, and at probably a quarter the cost. A wall outside Messrs. Oakey's, in Westminster Bridge-road, is built of Messrs. Parr & Strong's tubes. (Illustrated in *Builder*, vol. xxvi., p. 354.)—F. W.

* This slab of Lockwood is exactly similar to Taylor's brick which he used for concrete walling, with the exception, of course, that this brick was made of burned clay and of the size of a brick. (Illustrated in *Builder*, vol. xxvi., p. 658)—F. W.

CASE UNDER THE METROPOLITAN BUILDING ACTS.

NOTICE AS TO SHOP FRONT.

In the case of the District Surveyor of St. Giles's *v.* Peck, heard at the Bow-street Police Court before Mr. Vaughan, the defendant had taken out an old shop-front at No. 96, Oxford-street, and had put in a new one without giving notice to the District Surveyor. The District Surveyor had requested the builder to give notice of alterations done to a shop-front, in fixing new sashes and stall-board, also altering the position of the entrance-door; the cornice and plaster remaining as before.

Defendant contended that the work was only a necessary repair, and as such not requiring notice to be given.

The Magistrate decided that the work done was more than could be considered as a necessary repair, being a new shop-front, and that, to the extent of such alteration, it was subject to the regulation of the Act. A penalty of 20s. and 12s. costs was imposed.

"LIGHTS."

SIR,—Can any of your readers refer me to some reliable authority in dealing with such a case as the following?

A certain property consists of a public-house and a mews in the same ownership, but forming separate holdings. The mews is held on a lease, and a portion of the boundary between the two holdings consists of an imaginary line drawn between two fixed points and running parallel to one side of the public-house main building and about 10 ft. therefrom. The tenant of the public-house has received permission from the owner to extend his premises on that particular side by building up to the boundary line. There are several "lights" on the side referred to, and the question is whether those "lights" can be retained in the extension without the permission of my client, the lessee of the mews.

SURVEYOR.

*** If these lights have not been enjoyed without obstruction for twenty years the lessee of the mews can clearly obstruct them, that is assuming also that the lights in the addition are in fact the same as the former lights, though somewhat advanced.

DUSTBINS.

SIR,—May I ask a little space in your influential paper to say a few words on a little (?) grievance that exists in this parish (Fulham)? On Sunday I inspected some houses in the locality of "Hurlingham," and was horrified to see the dustbins of a row of houses quite underneath the kitchen windows,—so near that the servant would only have to lift up the window and empty the ashes and refuse into it. Surely this is indeed an evil, and the result of such a nuisance on the health of the incoming tenants must be lamentable, especially to the poor servant who has to breathe this foul atmosphere. Who is answerable for this?

A WOULD-BE TENANT.

THE NEW GOODS DEPOT FOR THE MIDLAND RAILWAY.

SIR,—In your account of the St. Pancras Goods Station [p. 777, *ante*] you state that the ironwork was entrusted to three firms, giving the names; but, as we were the makers of the whole of the wrought-iron screens and gates, and have more in hand, and our name is omitted, we shall be much obliged if you will supply the omission next week.

THOMAS POTTER & SONS.

South Molton-street.

Sanitary Institute of Great Britain.—The annual general meeting was held at the Parkes Museum of Hygiene, on Thursday, May 27th, Captain Douglas Galton, R.E., C.B., F.R.S., in the chair. Report was made by the Council on the work accomplished during the past year, attention being especially called to the examinations for local surveyors and inspectors of nuisances. Sixty-four candidates presented themselves for examination during the year, and the Council are glad to see that local authorities are beginning to appreciate the importance of appointing properly qualified men to fill these offices. It was reported that the Council had accepted an invitation to hold its next congress and exhibition in the City of York. An address of much interest with regard to sanitary science was given by the chairman, and the officers for the ensuing year were elected, the President being His Grace the Duke of Northumberland; Trustees, Sir J. Lubbock, bart., Dr. B. W. Richardson, F.R.S., and Mr. Thomas Salt.

The Student's Column.

OUR BUILDING STONES.—XIII.

THE SELECTION OF STONE (*continued*).

WE have frequently alluded to the action of the atmosphere in destroying stone in large cities and in the country, and pointed out both the principal causes and effects in connexion therewith. We have now to consider other destructive and preservative agents which affect certain districts only.

We will first consider *rain*. The amount of rainfall in some districts is much greater than in others. Now, we have seen that the action of rain and its impurities are the principal causes of the decay of stone, and it will, therefore, be quite evident that the rainy districts require more durable stones than those in which the annual rainfall is less. To reduce this to its minimum, we might show that in rainless countries no care whatever need be exercised in selecting stone, as far as durability is concerned, for in those countries very soft and bad stones will last for a considerable length of time. We will, however, confine our attention to this country.

In winter time the land on our western coasts is colder than the adjacent sea. Thus, when the warm and damp air of the Atlantic arrives on our shores it is chilled on contact with the colder surface of the ground, and rain is the result.

Moreover, the land being mountainous on that side of our country, the damp air is forced to ascend into the colder regions of the atmosphere. Thus another mode of condensation comes into play, helping to increase the humidity of the climate.

Being thus deprived of its moisture, the air, as it travels towards our eastern shores, is comparatively dry. Consequently the annual rainfall of our western counties is considerably higher than that of the eastern.

The annual rainfall at sea-level ranges from 60 or 80 in. on the west coasts of Ireland and Scotland, to about 20 in. on the east coast of England. In some localities, however, the fall is much greater, amounting to 154 in. on the average of six years, at Seathwaite, in Borrowdale, at the height of 422 ft. above the sea.*

But even as far as our western coasts are concerned, local circumstances so much influence the amount of rainfall of a district, that it is necessary, in estimating the rate of decay of building stones in a certain town, to ascertain the annual fall. Matters of this nature must be continually borne in mind when selecting stone. If, for instance, a stone be selected from the observed rate of disintegration in the quarry, and this quarry be situated in a district where the average annual rainfall is 25 in., it will be seen that if the stone be carried away from that district and built in one having an average of 50 in., other things being equal, the stone will decay there at rather more than double the observed rate at the quarry.

By attracting rain, as woods and thick forests, more particularly on elevated ground, are believed to do, the stones of mansions and other structures in their vicinity are also liable to decay more quickly than they might otherwise do.

The stone in edifices built in a position altogether sheltered from the sun soon rots, unless it is of very good quality, because after rain, there being no sun to quickly dry out the moisture, the acids and other destructive impurities in the rain have more time to act on the stone. On the other hand, those parts of a building exposed to the sun's rays stand a better chance of being preserved.

The direction of the prevailing winds in a district should be taken into account, for the side of a building exposed to their action is affected by the moisture, &c., they bring. Wind, nevertheless, is also a preserving agent (see *ante*, p. 525).

It is evident from the foregoing that not only the position of an edifice with reference to the physical features of the surrounding country, but the *position of a stone in a building* may very much influence its durability.

The effect of the deleterious agents referred to may to a great extent be counteracted.

The best stones should be placed in the more exposed parts of the building. Interior decorations may be constructed with freestones of moderate quality only, as they are not so liable to decay. Steps and other portions which are subjected to much wear and tear must be made of strong compact stones. Siliceous sandstone and granite are probably the best materials for these purposes.

The foundations of a building should be made with good, compact stone. Professor W. R. Johnson, speaking of the stone used in constructing the foundations of the extension of the United States Capitol, said that the foundations of the Capitol were intended to be embanked in such a manner that frost will never reach them, and that since the water falling on the building will be mostly carried away by pipes and drains, and the shielding of the surface by pavements or flaggings, the foundation walls will be kept comparatively dry.* The inference is that under these conditions the progress of decomposition of the stone will be retarded.

In building walls, stone having a laminated structure should be placed with the planes of those laminæ in a horizontal position. Considerable experience is required to find the bedding-planes, as they are called, in some stones, and if the structure of the stone is such that they cannot be otherwise distingnished, the mason usually knows them from the direction of the grain. But it is not necessary to be so careful in observing the bedding-planes in rocks that are not distinctly laminated.

If the bedding-planes of a clearly-laminated stone are placed in an upright position, parallel to the face of the wall, the layers peel off, one after another, under the action of the weather. If, however, these planes be placed at right angles to the exterior face of the wall, this peeling action cannot take place; but little furrows may be formed, as some of the laminæ are more susceptible to weathering than others.

"In arches, laminated stones should be placed with the natural bed as nearly as possible at right angles to the thrust upon the stone,—that is, with the "grain" or laminæ parallel to the centre lines of the arch stones, and perpendicular to the face of the arch.

In cornices with undercut mouldings the natural bed is placed vertically and at right angles to the face; for if placed horizontally, layers of the overhanging portion would be liable to drop off. There are in elaborate work other exceptions to the general rule."†

There are sandstones fit for large edifices, the appearance of which might be considerably improved in the tooling and dressing. Thus Dr. Page remarks that, whilst polishing will bring out the beauty of one variety, vertical droving may be more suitable for a second, and parallel broaching, or pearling may mask the grain or spottings of a third.

We may observe, however, that these ornamental lines often help the decay of stones, by affording ledges for rainwater to rest on, especially if the broaching lines are built in a horizontal position.

As the majority of stratified rocks have a tendency to weather more rapidly along their planes of stratification than anywhere else, it will be seen that when sandstones have a flaggy or fissile structure they are not desirable for building purposes. When exposed edgeways to the action of frost, however, they often split up into capital paving stones.

There are certain rocks known as Stonesfield "slate," Collyweston "slate," &c. These are not metamorphic slates produced by heat and pressure, like the Welsh and Scotch rocks of the same name, but are, in fact, merely fissile limestones, which, by the aid of frost, are capable of being split up into slabs of sufficient thinness for roofing purposes.

Electrical Transmission of Power.—The Cannon Foundry at Bourges has two 20-ton cranes for the handling of very large ordnance. Each of these is worked by a special electrical motor, with current furnished by a single generator. The power is transmitted a distance of 120 mètres, and is about 13 h.p. out of 25 h.p. The working has always been effected without accident. In the same establishment there has also been employed, since 1879, two gramme dynamos, one as a generator, the other as receiver for the testing of metals by means of a traction machine.

* See Scott's "Elementary Meteorology" (1883), p. 137.

* See Dobson's "Rudiments of Masonry and Stonecutting" (1873), Appendix, p. 121.

† Rivington's "Notes on Build. Const.," Part III. (Materials), p. 9.

Books.

Builder's Work and the Building Trades. By Col. H. C. SEDDON, R.E., Superintending Engineer H.M. Dockyard, Portsmouth, &c. With illustrations. London: Rivingtons. 1886.

THE facilities now afforded to students of both the engineering and the architectural professions for gaining information are enormously in advance of those which existed a few years ago. The numerous works which have been published, treating in detail the various operations connected with building from a practical point of view, and the admirable illustrations which add so largely to the value of these works, will enable a student to gain a very clear idea of what he has to learn, while the various technical schools and institutions which are springing up all over the country afford ample opportunities for supplementing the knowledge gained from books with a practical acquaintance with the subjects treated of. It must always be remembered that no amount of mere book-learning in the various branches of building construction can dispense with that practical familiarity which can only be gained from a close study of works in progress, but if a student has learned the reason why one method of doing a thing is right and another wrong, he will be able much better to appreciate the right way when he sees it.

In the work by Col. Seddon, under notice, it is stated in the preface that the details of construction are treated from the point of view of those who are actually engaged in the execution of builders' work, and it is precisely this fact which renders the work of great value to the architectural student, as he will find numerous small details noticed upon which he would in vain seek information elsewhere. The different building trades are separately treated, mainly from the point of view of the War Department contracts. The various operations and processes are carefully described, and the method of arriving at the value of finished work is explained. Excavators' work is discussed much more fully than is done in the majority of books, and useful details of carting, wheeling, &c., are given. As an instance of minute detail, we notice that attention is called to the fact that, as in laying concrete the joints are always weak parts, any joints in one layer should be covered by the succeeding one. This is a little matter too often neglected.

The subject of bond in brickwork is treated very fully, and the principles upon which bond really depends are elucidated, illustrations being given not only of what to do, but also of what to avoid, and sundry methods in which brickworkmay be scamped are particularised. There is also an admirable illustration showing the different ways of jointing and pointing brickwork, and the abomination of tuck-pointing is clearly demonstrated.

Masons' work is described in considerable detail, and the various modes of dressing stones are explained and illustrated. In the remarks upon bedding stones it is stated that "in projecting undercut mouldings and weathered copings the natural beds should be placed parallel to the side joints." Now surely this is rather too general a statement. No doubt, if one member of a cornice be deeply undercut it is not desirable to lay the course which comprises the member on its natural bed, but this is the only course which we should treat in this way, and we should certainly prefer to lay the stones of a weathered coping on their natural bed. The necessity of proportioning the bedding area of individual stones to their face area, and the danger likely to result from what are called flush joints, are clearly pointed out.

Some excellent information is given as to the various kinds of fir timber brought to the London market, and the shippers' and quality marks upon the baulks are illustrated and explained very clearly. This information must be of great value to architects, who, as a rule, have a very limited acquaintance with the brands on timber.

The different kinds of joints used in carpenters' work are fully described and well illustrated, and the absolute necessity of properly forming the joints connecting together the various parts of any framework is clearly pointed out. A capital illustration is given of what we do not remember noticing in other works of this kind, viz., the method

of securing a tenon by fox-tail wedging, and the different kinds of iron straps, bolts, &c., are described. We are also glad that the author calls attention to what we have always considered the very effective and simple method of roof-construction (on Philibert de l'Orme's principle) adopted in the Exhibition buildings at South Kensington. There is one little point in connexion with joiners' work on which we certainly cannot agree with the author. He says that in all cases of moulded panels, the moulding should be planted on, *i.e.*, made on separate pieces of stuff, and not worked on the stiles and rails. We quite admit that the latter method requires more care, and is more expensive, but all the best and strongest Mediæval joinery was constructed in this way, and we should have thought there could not be two opinions as to its superiority to the modern process of planting on.

The other building trades are all carefully treated, the plasterers' work being very fully described, and a large amount of valuable information as to the pigments and other materials used by painters is given. The use of Griffith's white in place of white lead in recent Government works is alluded to, and it will be matter for general congratulation if this excellent invention proves to stand the test of time.

The most valuable information is often found in the appendices to a work of this kind, and this is certainly the case here. In Appendix I. we have the tabulated results of a number of experiments upon the strength of concrete slabs. This is the very information which has been most urgently wanted, and if further experiments should confirm those here given we shall have to modify the generally-received opinion that the admixture of sand with ballast or broken bricks increases the strength of cement concrete, as the reverse seems to be the case. A full specification for concrete floors and roofs is added. Useful tables for the strength and deflection of timber are also appended.

It might have been supposed that the three volumes on "Building Construction," published by Messrs. Rivingtons, had exhausted this subject, but, admirable as these volumes are, there are yet omissions in them, and many of these are admirably filled up in the work under notice, and we can, therefore, cordially recommend Col. Seddon's book as a supplement to the larger work.

Ground Rents and Building Leases. By C. H. SARGANT, Barrister-at-Law. London: Swan, Sonnenschein, & Co. 1886.

THIS is a small volume of 160 pages, which very clearly explains the nature and attributes of the subject with which the writer deals, and weighs the arguments for and against leasehold enfranchisement and the rating of ground-rents. It is the best of the passing works on this subject which has yet come under our notice, and is the one which will best give a reader a clear view of this matter. Mr. Sargant points out in regard to the taxation of ground-rents that the present system is, in the first place, most convenient in regard to payment and collection; and in the second, even if ground-rents were taxed, it would not in reality benefit the occupier. It is obvious that the landlord, if he has to pay some part of the taxation now borne by the tenant, will increase by this amount the rent in the future; for, if a tenant will pay, say 100*l.* rent and 25*l.* taxes, he will be willing to pay 105*l.* in rent and 20*l.* in taxes. It is extremely probable, in our opinion, that the Legislature will make this change, even though it produces no substantial benefit to the occupier, simply on the ground that there is an apparent injustice in the present custom, although there is none, in fact, and because it will prevent the idea that the occupier is touched by an increase in local taxation, and not the landlord. However, we are not now discussing this subject, but pointing out that Mr. Sargant's work should be read by any one who desires to become master of it.

Les Céramiques de la Grèce Propre: Vases Peints et Terres Cuites. Par ALBERT DUMONT et JULES CHAPLAIN. Première Partie (3° fascicule). Paris: Firmin Didot. 1885.

THIS third instalment of M. Dumont's great projected work on the Ceramics of Greece proper has a very melancholy interest. It has tarried long, owing to the death (in August, 1884) of the illustrious author. He left behind him, it seems, ample material for this third issue, and a detailed plan for its arrangement, the completion of which has been undertaken by M. Pottier, his pupil and friend. From internal evidence we should say M. Pottier has added little of his own. The volume takes up the thread of the historical narrative just at the point where the Geometric style begins to blend with the Oriental style, as seen in the Rhodian vases; then come the earlier and later Corinthian styles, with the predominance strongly marked of Oriental manner. It is enough to read these two chapters to see that all the old blemishes are perpetuated. Much that is valuable is gathered together, but there is no digest. M. Dumont's intellect was of the order that accumulates, but does not focus, information. We are also strongly conscious that the whole point of view is distinctly *arriéré*. It is quite right, in speaking of Corinthian vases, to point to the analogy of the Chest of Cypselus, but it is superfluous to give us a detailed description of the technique and contents of this monument, which every archæologist knows by heart, and to point to analogies which are the commonplace of vase specialists, such as the Amphiaraos vase. All this is well enough for the populariser, but quite unworthy of the scientific archæologist. "Backwardness," the sin with which our German critics charge us, is, however, almost the invariable and indeed the inevitable concomitant of books planned on a large and sumptuous scale,—they tarry while time goes on. The best part of the book is undoubtedly the plates. They are published by anticipation, and have nothing whatever to do with the text. We are delighted to see a charming reproduction of a vase from Copenhagen, little known and of great beauty. It is the top of a pyxis, and the drawing is in the most exquisite manner. The design represents a "Judgment of Paris," but after a unique fashion. Instead of modestly walking to the "Judgment" the goddesses come in their chariots. Hera is drawn along in sober human fashion by four goodly horses, but Athene has yoked to her chariot two fine, bearded snakes, and Aphrodite's steeds are none other than two charming love-gods. We may note also an exquisite vase with red figures from Bœotia, which represents in quite novel fashion the Slaying of Busiris by Herakles; also a beautiful red-figured pyxis, with delicate designs, representing scenes of a Greek lady's toilet.

Ornament und Form des Attischen Grabstelen. Von ALFRED BRUECKNER. Strassburg: Struebner. 1886.

TREATISES on the subject, meaning, and sculptured decoration of Attic gravestones, already number legion, but, up to the publication of the present book, so far as we are aware, no systematic attempt has been made to catalogue and classify them on the basis of architectural form and ornamentation. It is manifest that this should be an important factor in any attempt to determine their chronology. For his material, Herr Brueckner has had access to the largest collection of photographs of grave reliefs at present in existence, that made by the Vienna Academy with a view to its projected Corpus of Attic tombstones. For this Corpus, it will be remembered that the grave reliefs, even of the British Museum (whose re-entombment Mr. Newton has recently so pathetically deplored) were for a while disinterred, so that Herr Brueckner's monograph will have special interest for English readers. We recommend the book for careful study, but we may note briefly that he divides all the stelæ into two main classes, the stele proper or simple slab, and its later development the naiskos or small shrine; that passing from form to decoration, he treats decoration under three heads, taking each in its historical development: vegetable motives, such as the palmette, the rosette; figure motives, the siren, the sphinx, lion, &c.; and the architectonic motives, pediment, antæ, &c. The text is illustrated by two map-plates.

The National Agricultural Hall.—A party of members of the Civil and Mechanical Engineers' Society on Saturday last visited the roof now being erected over the central portion of this building, and which was described and illustrated in our last number. The party were shown over the works by Mr. am Ende and Mr. A. T. Walmisley, the engineers.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

7,552, Window-sash Fastenings. J. Sharp.

This invention relates to a safety, self-acting locking fastening for window-sashes, skylights, &c., and consists of an apparatus worked by means of a cord, chain, or lever. A locking bolt is fixed on the top sash, which slides into a catch when the window is shut. To open the window an arrangement of pulleys is so placed that on pulling a cord to raise the sash the bolt is pulled out of its catch and the window unfastened, enabling the sash to be raised.

9,021, Roofs. J. B. Spence.

The object of this invention is to provide a temporary transparent covering to recreation-grounds or pleasure-gardens in winter, so as to form a winter garden, without the necessity for taking down the covering in the summer. One half of the space forming the pleasure-ground is covered with a permanent roof. For the other half of the ground a movable roof, which may be slidden over or under the permanent roof, is provided. The temporary roof is constructed of steel girders of lattice or such like form, and the sides rest on a track which is supported on suitably constructed masonry. In these tracks the roof slides and is moved backwards or forwards by suitable power as required.

8,662, Closet Pans and Seats. J. B. Weller.

In the upper part of the closet-pan, either solid therewith or connected thereto, is formed a nozzle, or branch, opening into the interior of the closet-pan above the water-line, on the outer end of which is attached a ventilating pipe, carried in any convenient way to the outer air, and fitted with a ventilating cowl. On the top edge of the pan rings of indiarubber are arranged to form an air-tight packing.

1,633, Window-fittings for Curtains. J. & H. A. K. Davis.

For affixing short curtains, instead of the ordinary nail or hook, a strip of brass carrying a tongue or blade spring is employed by the inventor. The cord suspending the blind is passed over the tongue, which grips it, and keeps it perfectly taut under the weight of the curtain suspended therefrom.

11,351, Ornamenting Glass and Vitreous Surfaces. John Slater.

Platinum sponge is ground with flux and turpentine, and then the glass coated with this is suspended in an electric bath and various metals deposited thereon in patterns. The copper, which is easiest in depositing, may be engraved or lacquered, and various patterns may be in this way fixed upon tiles, china, glass, or any vitreous surfaces.

NEW APPLICATIONS FOR PATENTS.

May 21.—6,817, J. Partington, Metal Doors and Frames for Buildings.—6,825, C. Priestland, Improvements in Knobs.—6,827, T. Robinson, Horizontal Saw-Frames.—6,831, P. Davies, Stench-Traps.—6,836, G. Nunn, Protection of Walls, Gates, &c.—6,850, G. Redfern, Preventing Concussion in Water Pipes.—6,865, J. Asbury, Traps for Sinks, Drains, Water-closets, &c.

May 22.—6,900, W. Sanday, Combined Lathe, Circular Saw, &c.—6,912, G. Butt, Wood Mouldings.—6,926, A. Clark, Sawing Machines.

May 24.—6,943, E. Wright, Ventilator.—6,945, J. Lamb, Flushing Tanks.—6,970, J. Petter, Heating Stoves or Firegrates.

May 25.—6,991, L. Nelke, Incidence Windows or Vault Lights.—7,009, R. Strangman, Reflectors.—7,011, T. Morris, Household Signals or Bell Indicato

May 26.—7,060, C. & F. Smith, Door-Checks.—7,067, W. Smeaton, sen., Flushing Water-closets, Lavatories, Urinals, &c.—7,068, W. Smeaton, sen., Flushing Water-closets, Urinals, Lavatories, &c., and Preventing Waste of Water.—7,069, W. Smeaton, sen., Flushing Water-closets, Urinals, Lavatories, &c., and Preventing Waste of Water.—7,078, S. Wilmot, Galvanised Iron Roofing.—7,079, H. Bridgen, Sash Fasteners.

May 27.—7,100, J. Rollason, Wedge for Securing Doors and Windows.—7,114, R. Stoffert & T. Dykes, Girders.—7,146, W. Doehring, Watchman Detector and Alarm Apparatus.

PROVISIONAL SPECIFICATIONS ACCEPTED.

5,212, F. Nutter, Wooden Fencing.—4,035, E. Wharington, Sanitary Pan.—4,567, G. Rayner and H. Hughes, Retaining Doors, Windows, or Shutters, in Open or Closed Position.—4,901, T. Whittaker, Hinges for Folding Doors.—4,977, G. Spink, Mould and Accessories for Making Bricks.—5,031, R. Weaver, Water Closet Apparatus, &c.—5,048, T. Burns, Felted Wire Netting, a Waterproof Material for Covering Buildings, &c.—5,235, W. Jenkins, Treble Ladder.—5,321, M. Hussey, Roofing Tiles, &c.—5,975, A. Boult, Manufacture of Cement.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

8,295, P. Davies, Apparatus for Burning Lead.—9,261, R. Boyle, Stoves, Furnaces, Firegrates, &c., for Heating and Ventilating Rooms.—9,418, J. Carter, Window Sashes to Fold Horizontally Inwards.—4,618, J. Anderson, Carriers for Dovetailing Machines.—5,445, H. Burson, Chimney Cowls for Extracting Smoke.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

MAY 23.

By S. B. CLARK & SON.

Portman-square—17, Portman-street, 77 years, ground-rent 95*l.* £6,100

MAY 24.

By THOMAS PEYER & MILES.

Folkestone, Tontine-street—The Imperial Brewery and sixteen public and beer houses, freehold ... 16,700
The Globe Hotel, term 61 years, ground-rent 8*l.* 8s. 1,910

By F. J. BISLEY.

Barking, King's-road—A plot of freehold land 270
1 to 4, Garden-cottages, freehold 500
38 and 40, King's-road, freehold 275
Southwark—399, Southwark Park-road, 64 years, ground-rent 5*l.* 240
King's-cross—14, Canal-terrace, 56 years, ground-rent 4*l.* 295
52 and 54, Muriel-street, 4 years, ground-rent 8*l.* 35
5, Regent's-terrace, 20 years, ground-rent 5*l.* 12s. 100
Hoxton—52, Allerton-street, 22 years, no ground-rent 150

By J. C. PLATT.

Hammersmith—127, King-street, 54 years, ground-rent 6*l.* 6s. 750

MAY 25.

By ST. QUINTIN & SON.

Fetter-lane—No. 47, freehold 1,050
City—64, Leadenhall-street, 13 years, ground-rent 100*l.* 1,800

By WOODS & SNELLING.

Holloway—26, Jackson-road, 76 years, ground-rent 7*l.* 7s. 450
Dalston—24, Marlborough-road, 58 years, no ground-rent 330
Camden-town—12 and 13, King-street, 3 years, ground-rent 10*l.* 70
21, Queen-street, 3 years, ground-rent 4*l.* 30
Kentish-town—40, Raglan-street, 38 years, ground-rent 5*l.* 220

By TUNLEY & CO.

Brockley—51 and 53, St. Margaret's-road, 76 years, ground-rent 13*l.* 5s. 1,100

By THURGOOD & MARTIN.

Westgate-on-Sea—The freehold residence called Sea Tower 2,550
Forest-hill—The residence, Danesfield, 79 years, ground-rent 12*l.* 10s. 1,300
Portland Estate—26 and 28, Great Barlow-street, 36 years, ground-rent 14*l.* 740

By ELLIS & SON.

City—28, Gracechurch-street, 11 years, ground-rent 230*l.* 2,500

By FAREBROTHER, ELLIS, CLARK, & CO.

St. John's-wood—48, Clifton-hill, freehold 1,140
Hampstead, Redington-avenue—A plot of freehold land 1,775

MAY 27.

By C. C. & T. MOORE.

Poplar—1, 2, and 3, Turner's buildings, copyhold... 535
55 and 59, Pennyfields, copyhold..... 390
St. George's-in-East—9, William-street, 15 years, ground-rent 2*l.* 5s. 120
429, Cable-street, 21 years, ground-rent 3*l.* 159

By COLEMAN & LEWIS.

South Hackney—55, Weatherell-road, 68 years, ground-rent 6*l.* 6s. 300
Old Kent-road—262, St. James's-road, 52 years, ground-rent 5*l.* 300
Walworth—30 and 32, East-street, freehold 1,200

By R. TIDEY & SON.

Kingsland—19 and 21, Balmes-road, 40 years, ground-rent 7*l.* 13s. 4d. 620

By T. G. LANGRIDGE.

Bayswater—1, Coburg-place, and 1, 3, and 5, Queen's-road, 35 years, ground-rent 6*l.* 15s. 260

By DALE & SON.

Bethnal-green—9 to 12, Tavistock-street, freehold... 820
13 and 14, Tavistock-street, and 20, Derbyshire-street, freehold 685
11 and 12, Parmiter-street, 43 years, ground-rent 2*l.* 8s. 310

By WILKINSON & SON.

Brighton—119 and 120, Western-road, freehold ... 1,100

By NEWBON & HARDING.

Regent's Park—6, Longford-street, 36 years, ground-rent 6*l.* 480
Camden Town—Ground-rents of 48*l.* a year, term 43 years 820
Improved Ground-rents of 32*l.* 10s. a year, term 53 years 560
Improved Ground-rents of 19*l.* 10s. a year, term 53 years 340
Kingsland-road—Nos. 423 to 429 odd, 40 years, ground-rent 24*l.* 1,500
457 and 459, 40 years, ground-rent 6*l.* 790
475, 477, and 479, 40 years, ground-rent 5*l.* 1,310
An Improved Ground-rent of 6*l.* a year, term 39 years 105

By E. STIMSON.

Brixton—241, 243, and 245, Coldharbour-lane, freehold 2,660
Sydenham—22 and 24, Rowland-grove, 79 years, ground-rent 10*l.* 180
41, Rowland-grove, freehold 170
Lambeth—174, Lambeth-road, freehold 990
Newington—46, Union-road, 17 years, ground-rent 4*l.* 15s. 280
Kennington—27, Methley-street, 45 years, ground-rent 5*l.* 370

By WORSFOLD & HAYWARD.

Dover—73, Folkestone-road, freehold 510
9, Trevanion-street, freehold 205
Ewell Minnis—Two freehold cottages 100
Shepherdswell—1 to 6, Prospect-cottages, freehold 440

MAY 28.

By J. HIBBARD.

Islington—17, Mildmay-Park, freehold 910
Holloway—4 and 5, Richmond-place, 65 years, ground-rent 11*l.* 600
Finsbury Park—117, Queen's-road, 90 years, ground-rent 10*l.* 10s. £840
28, Plimsoll-road, 93 years, ground-rent 5*l.* 10s.... 360

By F. HARDS.

Greenwich—7, Annandale-road, freehold 370
Wargrave, Bowsey-hill—A plot of land..... 75

MEETINGS.

SATURDAY, JUNE 5.

Colonial and Indian Exhibition.—Conference of the Geologists' Association. Paper by Professor Valentine Ball, F.R.S., on "The Mineral Resources of India." 3 p.m.

St. Paul's Ecclesiological Society.—Visit to Ongar, Greensted, &c. Paper by Major Heales, F.S.A. Train from Liverpool-street to Ongar at 3·30 p.m.

Association of Public Sanitary Inspectors. — Annual Dinner, Holborn Restaurant. 6 p.m.

Association of Municipal and Sanitary Engineers and Surveyors.—Eastern Counties' District Meeting at Great Yarmouth. Town-hall, 1 p.m.

MONDAY, JUNE 7.

Society of Engineers.—Mr. R. P. Spice on "Some Modern Improvements in the Manufacture of Coal Gas." 7·30 p.m.

Clerks of Works' Association.—Paper by Mr. F. A. Hocking. 8 p.m.

TUESDAY, JUNE 8.

British Museum.—Mr. J. A. P. MacBride on "The Sculpture of Pheidias and his School."—2·30 p.m.

Colonial and Indian Exhibition.—Conference of the National Association for Promoting State-directed Colonisation. 2 p.m.

THURSDAY, JUNE 10.

Society for the Encouragement of the Fine Arts.—*Conversazione* in the Galleries of the Institute of Painters in Water Colours. 8 p.m.

Society of Antiquaries.—8·30 p.m.

Colonial and Indian Exhibition.—Mr. F. W. Pennefather on "The Industries of New Zealand." 8·30 p.m.

FRIDAY, JUNE 11.

University College.—Professor C. T. Newton, C.B., on "Greek Myths illustrated by Fictile Vases and other Monuments."—III. 4 p.m.

Colonial and Indian Exhibition.—Conference of the Royal Colonial Institute. Paper by Mr. F. Young on "Emigration to the Colonies." 3 p.m.

Miscellanea.

"Silchester in 1886."—Under this title, Mr. Joseph Stevens, of Reading, contributed to the *Reading Observer* of the 15th ult. an interesting account of the present condition of the Roman remains at Silchester. He says:—"Any one who feels an interest in the antiquities of the country, and who has from time to time inspected the Roman *vestigia* at Silchester, will be painfully reminded of the changes which have taken place in the features of the exposed foundations since they were laid bare by the late Mr. Joyce in 1864-5. These observations are directed to the persistent, although not always uniform or noiseless, workings of Nature, which have certainly operated more largely in sapping the foundations of this ancient 'City of the Dead' during the twenty years of their exposure to the light, than had been effected in the 1,400 years of their entombment underneath the soil. Man has also done something as a wasting agent, inasmuch as the tiles and tessellations, which have been loosened by frost and scattered about by rain and wind, have gradually disappeared in the pockets probably of visitors. It appears evident that unless some measures be adopted for the protection of the foundations, their destruction at no distant date will be as thoroughly worked out as if accomplished by the agencies of the pick and spade."

Association of Municipal and Sanitary Engineers and Surveyors.—An Eastern Counties District Meeting is to be held at Great Yarmouth this Saturday, June 5. Members will assemble at 1 p.m. in the Town Hall (kindly granted for the occasion by the Mayor), and after the transaction of the usual routine business, they will visit the following works, in course of construction:—1. The sea-water works for sewer flushing and street watering; 2. The concrete footways. On returning to the Town Hall, the following papers will be read and discussed:—(1) "Great Yarmouth, and some of the Works of its Sanitary Authority." By Mr. J. W. Cockrill, Borough Surveyor, Great Yarmouth. (2) "The Sewerage, Surface Drainage, Sewage Disposal, and House Drainage of the Great and Little Bowden Local Board District." By E. G. Mawbey, Borough Surveyor, King's Lynn.

The Bricklayers at Turin have been lately agitating for an increase of pay and a re-adjustment of the hours of labour. After considerable discussion the men have agreed, as a temporary settlement of the question, to work ten hours a day—namely, from 6 a.m. to 11.30 a.m., and from 2 p.m. to 7 p.m., at the rate of 45 centimes (4½d.) an hour.

A New Building Estate at Wandsworth. For some months past the Down Lodge estate at Wandsworth, the property of Dr. Watney, has been in progress of conversion for building purposes. The estate, which occupies an area of upwards of 60 acres, is situated in the valley of the river Wandle, bounded on the east side by Garratt-lane, and on the west by Merton-road, and stretching northwards from a point near the Royal Paper Mills to within a short distance of High-street, Wandsworth. The works now going forward embrace the construction of several new roads intersecting the estate, and include the erection of no fewer than five bridges across the river Wandle and its tributaries. Two of these bridges are in connexion with a new road through the estate between Garratt-lane and Merton-road, running parallel, on the east side, with the new aqueduct which forms a portion of the storm-water sewer between Clapham, Brixton, and Putney, just completed for the Metropolitan Board of Works. Two other bridges form a portion of a second road across the estate, approached from South-street close to its junction with High-street, about the centre of Wandsworth Old Town. Altogether there will be four main approaches to the estate, two on the east side, in Garratt-lane and South-street, one at the north side at the junction of High-street with Merton-road, and a fourth approach in Merton-road on the west side, near the old mansion known as Down Lodge, which is about to be removed. A park and recreation ground, about 20 acres in extent, forms a special feature in the undertaking. A considerable portion of it has already been laid out and completed, and in addition to numerous winding walks, mounds, and plantations, includes a lake. The large area of the estate will admit of the erection of several hundreds of houses. Mr. Milner, C.E., has furnished the plans for laying out the estate, and has also designed the several girder bridges. Mr. Mackenzie is the general contractor, the park and recreation ground being formed under the superintendence of Mr. Martin, landscape gardener. Mr. Hutton is clerk of the works and general superintendent.

Recent Exploration.—The Director of the Geological Survey of Ireland, Professor Hull, F.R.S., delivered the annual address of the Victoria (Philosophical) Institute on Friday, on which occasion the Institute's new President, Professor Stokes, President of the Royal Society, took the chair. Professor Hull sketched the course taken by the scientific expedition of which he had charge (which, to a considerable extent, took the route ascribed to the Israelites), the physical features of the country, evidences of old sea margins 200 ft. above the present sea margins, showing that at one time an arm of the Mediterranean had occupied the valley of the Nile as far as the First Cataract, at which time Africa was an island (an opinion also arrived at by another of the Institute's members, Sir W. Dawson), and that, at the time of the Exodus, the Red Sea ran up into the Bitter Lakes, and must have formed a barrier to the traveller's progress at that time. He then alluded to the great changes of elevation in the land eastward of these lakes, mentioning that the waters of the Jordan valley once stood 1,292 ft. above their present height, and that the waters of the Dead Sea, which he found 1,050 ft. deep, were once on a level with the present Mediterranean sea margin, or 1,292 ft. above their present height. The great physical changes which had taken place in geological time were evidenced by the fact that whilst the rocks in Western Palestine were generally limestone, those of the mountains of Sinai were amongst the most ancient in the world.

The Iron, Hardware, and Metal Trades' Pension Society.—The forty-third annual festival dinner of this charity was held on the 27th ult., in the Hall of the Ironmongers' Company, Fenchurch-street, Mr. Wm. G. Ainslie, M.P., presiding. During the evening, subscriptions and donations to the amount of 437*l.* 19s. 6d. were announced by the Secretary, Mr. T. Hodges Papworth.

Bryant, Powis, & Bryant (Limited).—At the first annual meeting of this company, well known in the timber trade, the report (which was unanimously adopted, on the motion of the Chairman, Mr. Wilberforce Bryant) stated that the company had earned 22 per cent. on its capital during the year, and recommended the division of 15 per cent. to the shareholders.

The Newcastle Jubilee Exhibition.—On Monday afternoon a meeting of the Building Committee in connexion with this exhibition, of which we spoke a few weeks ago (see p. 696, *ante*), was held at the Mining Institute. Mr. W. Glover, architect, and vice-president of the Northern Architectural Association, submitted an amended plan showing the entrance on the east side, opposite the North-road, instead of the south-east corner, as in previous plans. The main entrance from the North-road has been set back to fifty feet, and additional exits have been provided. Provision is also made for connexion with the Royal Show on its eastern side. Mr. Glover sees no practical difficulty in this arrangement, and he states that the whole scheme can be carried out without destroying a tree. He has also avoided destroying any of the existing Corporation buildings, and has worked the exhibition square with the North-road. This will leave an area of about 2,500 yards at the south end, which will be valuable space for open or private structural exhibits. He feels that the reservoir, containing 2,029 yards, should be preserved. A portion of the margin could be covered in, and the centre left for diving bell, marine-working models, life-saving, and fire-extinguishing apparatus; and, with a little rustic treatment and bridge, the spot might be rendered very effective. As now amended, the general scheme has extended to the north-east corner of the Royal Show land. This will leave nearly two acres of open space, and one and a-half acres at the north end for mining and uncovered exhibits. The covered area, as shown in the plan, occupies 209,650 ft. The amended plan was adopted, and the architect was instructed to prepare elevations, sections, and estimate of cost, to be submitted to a future meeting of the committee.

New Water-supply for the City of Amsterdam.—The Amsterdam Water Company are carrying out large new works near Weesp, a small town about seven miles from Amsterdam, so as to effect a dual supply to the city. Last week, the Burgomaster of Amsterdam laid the lintel stone of the tower. Mr. John Aird presented the Burgomaster with a silver trowel with which to spread the mortar. Messrs. Quick & Sons are the engineers, and Messrs. John Aird & Sons are the contractors. The works cover about thirty acres, and consist of two large subsiding reservoirs, four filter beds, one large covered reservoir, engine and boiler houses, with two covered reservoirs in connection, and a tower 260 ft. high; manager's house, and cottages for the workmen; and a line of railway about 800 yards long They were commenced in August last, and are making very rapid progress. Messrs. John Aird & Sons have also the contract for the pipe-laying, which consists of about 140 miles of main and service laying. The supply of water is taken from the River Vecht, and runs by gravitation through a 48-inch main to the works. Mr. H. G. Huxley is the resident engineer, and Messrs. John Aird & Sons' agents are Mr. C. J. Wills for the works, and Mr. Jas. Eagle for the pipe-laying.

New Buildings on Ludgate-hill.—On the ground which was recently cleared between Pilgrim-street and Creed-lane for the widening of Ludgate-hill, two blocks of new buildings are ast approaching completion. The western block near Pilgrim-street is the larger of the two. It has a frontage to Ludgate-hill 61 ft. in length, and is carried to a height of between 60 ft. and 70 ft. Besides a spacious basement it contains the ground and four upper stories, the ground-floor containing five shops divided by polished granite pilasters. At the west end of the frontage there is an entrance, also in granite, to the upper floors. The upper portion of the elevation is faced with Portland stone, with a profusion of carving. The fourth floor has pedimented dormers above the main cornice. The upper or eastern block, at the corner of Creed-lane, has a frontage to Ludgate-hill 44 ft. in length, with a return frontage in Creed-lane of 46 ft. This block contains five stories: the ground story comprising four shops, the upper floors being intended for offices. Like the adjoining block, it is faced with Portland stone, but is plainer in character. The west block contains thirty-six suites of offices, and the east block sixteen suites. Messrs. Joseph & Smithem, of Finsbury-pavement, are the architects, and Mr. Cave is the builder and owner, the buildings having been erected under the superintendence of Mr. H. Hubbard as clerk of the works. The carving has been executed by Messrs. Seale & Son, of Walworth.

Sanitary Re-organisation in Marylebone.—An important step is being taken in Marylebone with a view to the re-organisation of the sanitary department. A committee was appointed to report on the subject, and, with one exception, all their recommendations are to be carried out. The first relates to the registration and supervision of sub-let houses. As an experiment, 150 of these houses were registered shortly after the outcry against the method in which the working-classes were housed in the metropolis, and the result is stated to have been so satisfactory that the number is now to be gradually increased up to 1,500. It is also at last admitted that the method of dust removal in force is a failure. The "Lump Contract" system is an unwise one, for the contractor's main object, when he arranges for the work for a specific period, must be to make as much as he can out of the transaction. Until March, 1887, the present system must be retained; but it is expected that before that time arrives the Sanitary Committee, with the aid of the medical officer of health, will have a better scheme to submit; and it is suggested that the contracts about to come into force shall be placed under the supervision of the sanitary department, and that an experiment should be made with the movable pail system for some portion of the district containing about 500 houses. Re-arrangement of the inspectors of nuisances is to be made, so that each shall be responsible, amongst other things, for dust removal and inspection of registered houses in a definite area; and two additional officers are to be appointed.—*Lancet*.

A Day in the Country.—We are asked to give publicity to the following appeal:—"The managers of the East London Mission earnestly appeal for funds to enable them to take 600 or more of the very poorest children from courts and alleys of East London for a day in Epping Forest. This annual treat is eagerly anticipated by hundreds of destitute little ones. Contributions are urgently solicited, and should be sent to Mr. G. Hopkins, Superintendent, at the Mission Hall, 263, Cable-street, St. George's, E."

The Royal Academy, 1886.—Messrs. Boussod, Valadon, & Co. are about to produce a series of 150 large reproductions of the principal works in the Exhibition, by their process of typo-gravure. The volume will be ready towards the end of June.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ....ton	6	5	0	7	0	0
Teak, E.I. ....load	12	10	0	15	0	0
Sequoia, U.S.....foot cube	0	2	4	0	2	8
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...	3	0	0	4	10	0
Elm ,, ...	3	10	0	4	15	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	3	0	0	5	0	0
Canada	5	10	0	6	10	0
Pine, Canada red	3	0	0	4	0	0
,, yellow	3	0	0	5	0	0
Lath, Dantsic ....fathom	3	10	0	5	0	0
St. Petersburg	4	0	0	6	0	0
Wainscot, Riga....log	2	15	0	4	10	0
,, Odessa, crown	3	12	6	3	15	0
Deals, Finland, 2nd and 1st...std. 100	7	10	0	8	10	0
,, 4th and 3rd	6	0	0	7	10	0
Riga	6	0	0	8	0	0
St. Petersburg, 1st yellow	9	0	0	14	0	0
,, 2nd ,, ...	7	0	0	8	15	0
,, white	7	0	0	10	0	0
Deals, Swedish	6	0	0	15	0	0
White Sea	7	0	0	17	10	0
Canada Pine, 1st	17	0	0	30	0	0
,, 2nd	12	0	0	17	0	0
,, 3rd, &c.	6	0	0	10	0	0
,, Spruce 1st	8	0	0	11	0	0
,, 3rd and 2nd	5	0	0	7	10	0
New Brunswick, &c....	5	0	0	7	0	0
Battens, all kinds	4	0	0	12	0	0
Flooring Boards, sq. 1 in., Prepared, first	0	9	0	0	13	0
Second	0	7	6	0	8	6
Other qualities	0	5	0	0	7	0
Cedar, Cuba.....foot	0	0	3½	0	0	4
Honduras, &c.	0	0	3	0	0	4
Australian	0	0	2½	0	0	3
Mahogany, Cuba	0	0	5	0	0	7½
St. Domingo, cargo average	0	0	5	0	0	7½
Mexican ,, ...	0	0	3½	0	0	4½
Tobasco ,, ...	0	0	4	0	0	6½
Honduras ,, ...	0	0	4½	0	0	6½
Maple, Bird's-eye....	0	0	6	0	0	8
Rose, Rio .....ton	7	0	0	10	0	0
Bahia....	6	0	0	10	0	0
Box, Turkey	5	0	0	18	0	0
Satin, St. Domingo .....foot	0	0	7	0	0	11
Porto Rico	0	0	8	0	1	3
Walnut, Italian	0	0	4	0	0	5

METALS.						
IRON—Pig in Scotland .....ton	0	0	0	0	0	0
Bar, Welsh, in London....	4	10	0	4	17	6
,, ,, in Wales	4	5	0	4	10	0
,, Staffordshire, London	5	5	0	6	10	0
METALS (*continued*).						
Sheets, single, in London....	6	15	0	8	10	0
Hoops ,, ...	6	0	0	7	0	0
Nail-rods ,, ...	5	10	0	6	10	0
COPPER—						
British, cake and ingot ....ton	42	10	0	43	10	0
Best selected	44	0	0	45	0	0
Sheets, strong....	50	0	0	0	0	0
,, India	47	0	0	48	0	0
Australian	47	0	0	47	10	0
Chili, bars	39	10	0	40	0	0
YELLOW METAL.....lb.	0	0	4½	0	0	0
LEAD—Pig, Spanish	12	10	0	0	0	0
English, common brands....	12	17	6	0	0	0
Sheet, English	13	12	6	13	17	6
SPELTER—						
Silesian, special .....ton	14	2	6	14	5	0
Ordinary brands	13	17	6	14	0	0
TIN—						
Banca .....ton	0	0	0	0	0	0
Billiton	0	0	0	0	0	0
Straits	98	2	6	98	12	6
Australian	98	15	0	0	0	0
English ingots....	102	0	0	0	0	0
ZINC—						
English sheet .....ton	18	0	0	18	5	0
OILS.						
Linseed .....ton	20	5	0	20	10	0
Cocoanut, Cochin	31	0	0	0	0	0
Ceylon	25	0	0	0	0	0
Copra....	0	0	0	0	0	0
Palm, Lagos	22	0	0	23	0	0
Palm-nut Kernel	0	0	0	0	0	0
Rapeseed, English pale....	22	10	0	0	0	0
,, brown	20	15	0	21	0	0
Cottonseed, refined	17	12	6	18	15	0
Tallow and Oleine	25	0	0	45	0	0
Lubricating, U.S.	6	0	0	10	0	0
,, Refined	8	0	0	13	0	0
TURPENTINE—						
American, in casks.....cwt.	1	3	6	1	4	0
TAR—Stockholm .....barrel	0	17	0	0	17	6
Archangel....	0	10	6	0	11	3

TENDERS.

ABERAVON.—For erecting a building for the Mechanics' Institute, Aberavon. Mr. J. Buckley Wilson, architect, Swansea:—

J. & S. Rees, Cwm-Avon (accepted)..	£1,260 0 0

ASHTON-UNDER-LYNE.—For building a residence at Ashton-under-Lyne, for Mr. J. C. Fell. Mr. J. H. Burton, Architect, Ashton-under-Lyne.

Charles Genney, Manchester	£1,716 13 7
John Ross, Manchester	1,598 0 0
Garside, Barnes, & Co., Stalybridge	1,560 0 0
William Holt, Manchester	1,540 0 0
Castle Hall Saw Mills Co., Stalybridge	1,500 0 0
Zachariah Pike, Heoley Hill	1,487 10 0
Thomas Dean, Ashton-under-Lyne...	1,475 10 0
Joseph Clayton, Denton	1,475 0 0
Allen Holmes, Ashton-under-Lyne...	1,468 0 0
H. Rowlands, Ashton-under-Lyne ...	1,452 0 0
R. H. Grason, Manchester	1,440 0 0
James Garside, Ashton-under-Lyne	1,435 0 0
Charles Morris, Ashton-under-Lyne	1,430 10 0
Jabez Gibson, Dunkinfield	1,420 0 0
Isaac Cropper, Dunkinfield	1,405 0 0
J. W. Williamson, Ashton-under-Lyne....	1,400 0 0
John Robinson, Ashton-under-Lyne	1,398 0 0
William Underwood, Dukinfield.....	1,396 0 0
Walter Clough, Ashton-under-Lyne	1,370 0 0
Davison & Carr, Manchester	1,357 0 0
Wm. Storr, Sons, & Co. Limited, Stalybridge (accepted)	1,330 0 0

ASHTON-UNDER-LYNE.—For erecting boundary-walls, gates, and a pavilion to a Bowling-green, at Ashton-under-Lyne. Mr. J. H. Burton, architect, Ashton-under-Lyne:—

John Ross, Manchester	£225 19 11
Charles Genney, Manchester	213 12 7
Davison & Carr, Manchester	210 0 0
Thomas Dean, Ashton-under-Lyne ...	198 0 0
Allen Holmes, Ashton-under-Lyne ...	196 0 0
John Robinson, Ashton-under-Lyne ...	195 0 0
Isaac Cropper, Dukinfield	193 6 0
Charles Morris, Ashton-under-Lyne ...	193 0 0
Walter Clough, Ashton-under-Lyne ...	190 0 0
Jabez Gibson, Dukinfield....	182 0 0
J. W. Williamson, Ashton-under-Lyne	177 0 0
Z. Pike, Hooley Hill	174 0 0
H. Rowland, Ashton-uuder-Lyne.....	171 0 0
R. H. Grayson, Bradford	170 0 0
Wm. Storrs, Sons, & Co., Limited, Stalybridge (accepted)	170 0 0
W. Underwood, Dukinfield	134 14 0

BROMLEY (Kent).—For building first portion of Church of St. Luke, Bromley-common, Kent. Mr. Arthur Cawston, architect, Spring-gardens. Quantities by Messrs. Sandall, Corderoy, & Selby, Queen Anne's-gate:—

	Whole Scheme.	Subsidiary Scheme.
Hitchcock	£6,050 0 0	£4,040 0 0
Langley	4,050 0 0	2,750 0 0
Ambrose....	3,945 0 0	2,684 0 0
Sabey & Son	3,808 0 0	2,820 0 0
Taylor & Son....	3,615 0 0	2,398 0 0
Staines & Son	3,582 0 0	2,480 0 0
Lowe	3,559 0 0	2,339 0 0
Holt....	3,550 0 0	2,500 0 0
Smith	3,524 0 0	2,357 0 0
J. & C. Bowyer	3,490 0 0	2,336 0 0
F. Higgs....	3,470 0 0	2,340 0 0
Maides & Harper ...	3,450 0 0	2,270 0 0
Parker	3,450 0 0	2,262 0 0
Grubb	3,450 0 0	2,207 0 0
Arnaud & Son	3,417 0 0	2,269 0 0
Holloway	3,400 0 0	2,390 0 0
Dobson	3,375 0 0	2,295 0 0
Priestley & Gurney ..	3,370 0 0	2,289 0 0
Lay	3,350 0 0	2,250 0 0
Marsland	3,288 0 0	2,468 0 0
Smith & Son....	3,245 0 0	2,210 0 0
Howell & Son	3,240 0 0	2,240 0 0
Crossley *	3,234 0 0	2,319 0 0
Woodhams	3,189 0 0	†1,119 0 0

* Mr. Crossley's Tender for the "whole scheme" accepted.
† Error.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Hospital, Merthyr Tydfil	.....	Not stated	Not stated	i.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Taking down Buildings and Clearing Site, &c	St. Mary Abbott's (Kensington) Vestry	W. Weaver.....	June 8th	xiv.
Making-up Roads	Wandsworth Bd. of Wks	*Official*	do.	xiv.
Painting, &c., Wood Blocks and Asphalting...	Chelsea Vestry.....	G. R. Strachan.....	do.	ii.
Broken Guernsey Granite	West Ham Local Brd.	Lewis Angell.....	do.	ii.
Making-up Roads	do.	do.	do.	ii.
Road Making and Paving	Hammersmith Vestry...	*Official*	June 9th	xiv.
Sewerage Works	St. Luke's Vestry	do.	do.	ii.
Blue Guernsey Granite	Hackney Board of Wks	J. Lovegrove.....	do.	xiv.
Paving and Repair ng Carriageways, &c.	St. Martin-in-the-fields	H. Jacques.....	June 10th	ii.
Extensions and Alterations to Hall.....	Hackney Workmn's Club	H. Bradley.....	do.	xiv.
Execution of Smith's Work, &c.	Lambeth Vestry	H. McIntosh.....	do.	xiv.
Clocks, Window-Blinds, and Chairs	School Brd for London	*Official*	June 11th	ii.
Painting, Cleansing, and Repairing.....	do.	do.	do.	ii.
Dining and Recreation-Hall, &c.	Burntwood Asylm, Staffs	R. Griffiths	June 14th	xiv.
Red Baltic Deals	Norwich Corporation ...	*Official*	do.	xiv.
Completion of St. John's Church, Macclesfield	Rev. R. Hurst	.....	June 16th	xiv.
Forming Roads and Footpaths, Cambridge...	.....	.....	do.	xiv.
Making-up Roads	Chiswick Local Board	A. Ramsden	do.	xiv.
Sewerage Works, Buckhurst Hill	Epping R.S.A.	E. Egan	June 17th	ii.
Making-up Road	Dartford Local Board	*Official*	do.	ii.
Works, Repairs, and Building Materials	War Department.....	do.	June 18th	ii.
Enlargement, Post-Office, Bath	Com. of H.M. Works ...	do.	do.	i.
Main Drainage Works	Acton Local Board	C. N. Lailey	June 22nd	ii.
Pipe-Sewers, &c.	Lambeth Vestry	H. McIntosh.....	June 24th	xiv.
Broken Granite, Flints, and Gravel	Hendon U. R. S. A. ...	T. Henry	do.	xiv.
Erection of Houses, Angle	Admiralty	*Official*	June 25th	i.
Engines, Boilers, and Pumping Machinery ...	Acton Local Board	C. N. Lailey	July 6th	ii.
Completion of Houses, West Hampstead	.....	H. Cheston.....	Not stated	xiv.
Sewerage Works, Sea Wall, Swimming Bath	Lynton Local Board ...	Davison & Davison	do.	xiv.
Block of Buildings, Piccadilly	Rt. Hn. Ld. Walsingham	W. O. Milne	do.	xiv.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Surveyor and Inspector of Nuisances	Dartford Local Board...	200*l.*	June 16th	xviii.

BETHNAL-GREEN.—For alterations to premises known as the Flying Horse, Usk-street, Bethnal-green. Mr. Fredk. C. Kettle, architect:—

J. W. Heep	£172	0	0
J. Walker	150	0	0
J. W. Cowper	148	0	0
M. Calnan & Co.	147	10	0
W. Cleaver.....	143	0	0
M. A. Palmer & Co. (accepted)	120	0	0
J. Hearle & Son (withdrawn)	85	0	0

CARDIFF.—For hotel and two dwelling-houses, Splott-lands, Cardiff. Messrs. W. G. Habershon & Fawckner, architects:—

Shepton & Son	£3,295	0	0
T. Gough	3,062	0	0
E. Beames	2,940	0	0
D. J. Davies (accepted).....	2,900	0	0

[All of Cardiff.]

CHATHAM. — For re-seating, new gallery front, windows, decorations, &c., at the Ebenezer Congregational Church. Mr. George E. Bond, architect, Rochester:—

G. M. Hammer & Co., London	£1,335	0	0
Darby, Rochester.....	1,130	0	0
Edser & Bockham, Chatham.....	1,085	0	0
Skinner, Chatham.....	1,080	0	0
Callund & Son, Rochester	1,057	0	0
Sampson, Chatham	1,018	0	0
Naylar & Son, Rochester	987	0	0
Gates, Rochester	931	0	0
Seager, Borden (accepted)	895	0	0

CLEETHORPES (Lincolnshire).—For the erection of new stabling, for Mr. Joseph Chapman. Mr. E. W. Farebrother, architect:—

Guy Bros. (accepted).....	£581	10	0

COBHAM.—For the erection of a pair of villa residences, at Cobham, Surrey, for Mr. Chas. Woodbury. Mr. H. A. Whitburn, architect, Woking:—

A. Newland, Cobham	£960	0	0
R. Wood, Cobham (accepted).....	887	10	0

FULHAM.—For new hot-water supply apparatus, at the Western Hospital, Seagrave-road, Fulham, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects. Quantities not supplied:—

J. & F. May	£1,200	0	0!
Comyn, Ching, & Co.	1,097	0	0
Colbran & Co.....	1,090	0	0
Wilkinson & Co.	894	0	0
Vaughan & Brown	870	0	0
Rogers	780	0	0
Jeakes & Co.	774	7	0
Knight.....	735	0	0
Wenham & Walters	724	0	0
Stidder & Co.	695	0	0
R. Crane,* Stockwell Park-road.....	650	0	0!

* Accepted.

FULHAM.—For alterations and additions to the fever wards, and other work, at the Western Hospital, Seagrave-road, Fulham, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects, Leadenhall-street. Quantities not supplied:—

W. Johnson	£2,658	0	0
Haynes	2,500	0	0
G. Lyford, Uxbridge-road (accepted)	2,265	0	0

FULHAM.—For St. Peter's Vicarage House, for the Rev. R. Cordwell. Mr. J. E. K. Cutts, architect:—

Martin Wells & Co.	£2,425	0	0
Brass & Son	2,390	0	0
Dove Bros.....	2,345	0	0
Goddard & Sons	2,280	0	0
Chamberlen Bros.	2,240	0	0
L. H. & R. Roberts	2,230	0	0
Lathey Bros.	2,220	0	0
J. Tyerman.....	2,165	0	0
J. Holloway	2,075	0	0

GRIMSBY.—For the erection of the Prince of Wales Theatre, for Mr. H. J. Curry, Freeman-street, Grimsby. Mr. E. W. Farebrother, architect, Grimsby:—

Reggall & Hewins (accepted)	£5,000	0	0

GRIMSBY.—For the erection of a pair of villa residences facing the People's Park, Grimsby, for Messrs. A. J. Read & W. H. Allcock. Mr. E. W. Farebrother, architect:—

Reggall & Hewins (accepted)	£1,600	0	0

GRIMSBY.—For the erection of house, for Mr. A. Baxter, Grimsby. Mr. E. W. Farebrother, architect:—

Willows & Roebuck.....	£865	0	0
C. B. Topham	810	10	0
J. & R. G. Guy.....	807	0	0
Gray Bros. (accepted)	795	0	0
Reggall & Hewins	789	0	0
T. Simonson.....	794	0	0

HACKNEY. — For additions to 44, Pembury-road, Hackney Downs, for Mr. J. Edell. Messrs. T. & W. Stone, architects, Great Winchester-street, E.C.:—

Room	£252	0	0
Beale	240	0	0
Godfrey & Son	234	0	0
Peppiatt	200	0	0

ISLINGTON. — For additions and alterations to premises, 219½, Upper-street, Islington, for Mr. T. R. Roberts. Mr. J. Kingwell Cole, architect. Messrs. Battam & Co., surveyors, Mount-street, Grosvenor-square, W.:—

Sage & Co.	£1,598	10	0
Dove Bros.	1,405	0	0
Patman & Fotheringham	1,375	0	0
G. S. Williams & Son	1,360	0	0
Macey & Sons	1,321	0	0
Wall Bros.	1,170	0	0

KENSINGTON. — For the erection of male staff quarters at the Infirmary, Marloes-road, Kensington, for the Guardians of Kensington. Messrs. A. & C. Harston, architects, Leadenhall-street. Quantities supplied:—

Campkin & Son	£2,076	0	0
Sabey & Son	1,890	0	0
Ward & Lamble	1,877	0	0
Staines & Son	1,844	0	0
Leslie & Knight.....	1,728	0	0
Geo. Roberts	1,698	0	0
Deacon & Co.....	1,693	0	0
W. J. Hack	1,684	0	0
W. Johnson	1,645	0	0
D. Brown & Co.	1,615	0	0
H. Haynes,* Alperton, Harrow	1,607	0	0

* Accepted.

LONDON.—For new Infants' School, Chicksand-street, Tower Hamlets Division, for the School Board for London. Mr. T. J. Bailey, architect. Quantities by Mr. Earl, Outer Temple, W.C.:—

F. & F. J. Wood	£7,194	0	0
J. Holland	6,786	0	0
W. J. Hack	6,671	0	0
C. Cox	6,643	0	0
T. L. Green	6,270	0	0
S. Sabey & Son	6,177	0	0
Atherton & Latta.....	6,150	0	0
W. Oldrey	6,084	0	0
J. Holloway	6,000	0	0
Stimpson & Co.....	5,977	0	0
H. L. Holloway	5,889	0	0
H. Hart	5,870	0	0
W. Johnson	5,673	0	0
S. J. Jerrard.....	5,583	0	0

LONDON.—For new cell accommodation at Bow-road Police Station, for the Commissioners and Receiver for the Metropolitan Police District. Mr. John Butler, surveyor for Metropolitan Police:—

Lathey Bros.....	£998	0	0
W. H. Smith.....	981	0	0
C. Barnes	956	0	0
J. Holland.....	932	0	0
J. H. Ford.....	928	0	0
W. V. Tinck	900	0	0
J. Grover & Sons.....	877	0	0
C. Ansell	876	0	0

LONDON.—For Artisans' Dwellings, in Cleveland-street, Mortimer-street, W. Mr. E. C. Robins, architect, Berners-street:—

		Extra if done in Sections.
Conway	£10,292	..... —
Brass	6,383	..... £200
Wall Bros.....	6,274	 62
Ansell	6,100	 100
Manley	5,987	 300
Stevens & Bastow	5,993	..... —
Bywaters.....	5,873	 180
Shaw	5,789	 100

LONDON. — For alterations and additions at the Metropolitan, Farringdon-road, E.C., for Messrs. G. Warman & Co. Mr. W. T. Farthing, architect:—

S. Godden	£1,197	0	0
H. Pickersgill & Co.	1,145	0	0
R. W. Edgley	1,062	0	0
W. Royal & Co.....	1,060	0	0
S. R. Lamble.....	1,050	0	0
Spence & Co.....	1,020	0	0
Leslie & Knight	984	0	0
W. Scrivener & Co. (accepted)	971	0	0

LONDON.—For constructing new road, paving, kerbing, and drainage, Madron-road, S.E., for the Trustees of Mrs. Backhouse. Mr. W. C. Reed, surveyor, Adelaide-place:—

Mays	£872	15	0
Pennack	795	0	0
Pizzey (accepted)	790	0	0
Additional Macadamised Work.			
Pizzey (accepted).....	100	0	0

LONDON.—For paving a portion of Bett-street for the Vestry of St. George-in-the-East. Mr. G. Wilson, Surveyor.

W. H. Wheeler, 11, Queen Victoria-street (accepted).....	£102		

LONDON.—For building two shops at 254 and 256, Old Kent-road, for Messrs. James Sprunt & Son. Mr. W. C. Reed, architect, Adelaide-place, London Bridge:—

Battey	£747	0	0
Jerrard Bros.	693	0	0
Balaam	642	0	0
Greenwood Bros. (accepted)	599	0	0
Kennard Bros. (withdrawn)	562	0	0
Repairs to House and Shop Fittings.			
Greenwood (accepted)	100	0	0

LONDON.—For alterations to 44 and 43, Lombard-street, E.C., for Messrs. Fielding Bros. Messrs. T. & W. Stone, architects, Great Winchester-street, E.C.:—

Colls.....	£337	0	0
Jeffreys	224	12	0
Trent Bros.	207	10	0
Jewellery Supply Co.....	198	8	0

LONDON.—For the erection of warehouses in Farringdon-street and Bear-alley, E.C., for Messrs. Harrild & Sons. Messrs. Theodore R. Green & Son, architects, Finsbury-pavement, E.C.:—

Dove Bros.	£7,855	0	0
W. Brass & Son	7,433	0	0
L. H. & R. Roberts.....	7,296	0	0
Scrivener & Co.	7,276	0	0
Grover & Son	7,182	0	0
Mark Manley.....	7,115	0	0
R. Aviss & Co.	6,970	0	0
J. Woodward, Wilson-street, Finsbury (accepted)	6,834	0	0

LONDON.—For taking down and rebuilding 11, Harley-street, Cavendish-square, for Mr. W. Morrant Baker. Messrs. Alexander Payne & F. M. Elgood, architects. Quantities by Mr. E. J. Pain, Buckingham-street:—

Charles Cox	£3,775	0	0
H. Baylis	3,597	0	0
Thomas Boyce	3,590	0	0
Longmire & Burge	3,512	0	0
Adamson & Sons	3,479	0	0
John Woodward	3,400	0	0
G. H. & A. Bywaters	3,363	0	0
Perry & Co.	3,358	0	0
T. L. Green	3,245	0	0
Stimpson & Co. (accepted)	3,220	0	0

LONDON.—For alterations to 59, Pall-mall. Mr. C. R. Baker King, architect:—

Love & Co.....	£884	0	0
Hermon & Co.	798	0	0
Laing & Son (accepted).....	664	0	

LONDON.—For alterations, repairs, and decorations, Hyde Park-gate, W., for Mr. C. E. Lewis, M.P. Mr. T. Pearson, architect. Quantities supplied:—

Battam & Heywood, Oxford-street	£1,244	0	0
Sendall & Son, Brighton	1,210	19	6
W. & H. Castle,* Southwark-street	1,174	0	0

[Architect's estimate, 1,194*l.*]
* Accepted.

REDHILL (Surrey).—For stables at the Hawthorns, for Mr. E. F. Hubbuck. Mr. F. Edwards, architect, John-street, Adelphi:—

Patrick & Sons, Lambeth	£1,473	0	0
Jerrard, Lewisham	1,289	0	0
C. Ansell, Lambeth	1,286	0	0

SPITALFIELDS.—For the erection of the superstructure of a block of model dwellings, in Flower and Dean-street, Spitalfields, for the Four Per Cent. Industrial Dwellings Company, Limited. Messrs. N. S. Joseph & Smithem, architects. Mr. S. B. Wilson, surveyor:—

E. Conder	£25,936	0	0
Killby & Gayford	25,785	0	0
Outhwaite & Son	25,560	0	0
Scrivener & Son	24,964	0	0
G. S. Williams & Son	24,870	0	0
W. Shepherd	24,637	0	0
Ashby Bros.	24,500	0	0
J. T. Chappell	24,393	0	0
Colls & Son	24,270	0	0
Patrick & Son	24,070	0	0
Patman & Fotheringham	23,873	0	0
M. Gentry	22,970	0	0
Brass & Son	22,355	0	0
Ashby & Horner	22,240	0	0

SUTTON (Surrey).—For stabling to North Cheam House, for Mr. J. Proctor. Mr. Herbert D. Appleton, architect, Wool Exchange:—

H. Hillman	£546	0	0
E. J. Burnand	538	0	0
G. Hards	448	0	0

TOTTERIDGE (Herts).—For the erection of an orphanage. Mr. G. Hall, architect, Hammersmith. Quantities by Mr. Wm. Henry Strudwick:—

Joseph Brown & Son,* Margate	£7,000	0	0

* Accepted.

VENTNOR (I.W.).—For the erection of residence, stables, &c., at St. Lawrence, I.W., for Captain C. B. Fisher. Mr. Theodore R. Saunders, architect. Quantities by the architect:—

J. Newnham, Ventnor	£6,150	0	0
J. Ball, West Cowes	5,295	0	0
Jolliffe & Son, Bonchurch	5,159	0	0
Ingram & Son, Ventnor (accepted)	5,094	0	0

WALWORTH.—For pulling down and rebuilding the Prince Alfred public-house, Walworth-road, for Mr. J. Dyke. Messrs. J. & J. S. Edmeston, architects, Old Broad-street. Quantities supplied:—

Frost	£2,800	0	0
Hayworth	2,405	0	0
Landen	2,389	0	0
Huthwaite	2,380	0	0
Steel Bros.	2,325	0	0
Marsland	2,325	0	0
Holloway	2,296	0	0
Smith & Sons	2,255	0	0
Jackson & Todd	2,243	0	0
Kynoch & Co.	2,240	0	0
Beale	2,229	0	0
Croaker	2,070	0	0

WALWORTH.—For alterations, &c., at the King's Arms, Walworth-road. Messrs. G. Warman & Co. Mr. W. T. Farthing, architect:—

W. Josolyne	£2,100	0	0
Canning & Mullins	1,897	0	0
R. W. Edgley	1,857	0	0
H. Pickersgill & Co.	1,820	0	0
J. Beale	1,798	0	0
Spencer & Co.	1,785	0	0
W. Scrivener & Co.	1,716	0	0
Leslie & Knight	1,700	0	0
Ben. Cook (accepted)	1,587	0	0

WALWORTH.—For additional room at 18, and repairs externally and painting at 57, and nine private houses adjoining, in Villa-street, for Mr. W. Lywood. Mr. Edward Crosse, architect and surveyor, Bermondsey-square. No quantities:—

T. Lapthorne & Co., Lambeth	£184	0	0
J. Appleby, Lambeth	144	10	0
A. White & Co., Rotherhithe	129	0	0
P. Lidston, Deptford (accepted)	107	0	0
J. F. Scipeo, Peckham	99	12	0

WATFORD (Herts).—For erecting new house in the Bushey Hall-road, for Mr. G. Ellingham (all bricks found by employer). Mr. C. P. Ayres, architect, Watford:—

T. Turner	£896	0	0
C. Brightman	845	0	0
Clifford & Gough	825	0	0
W. B. Neal	825	0	0
Andrews & Sons	823	0	0
T. Bonnett	810	0	0
G. & J. Waterman	789	0	0
A. W. Chadwick (accepted)	760	0	0

[All of Watford.]

WATFORD (Herts).—For additions to the West Herts Liberal Club Mr. C. P. Ayres, architect:—

G. & J. Waterman	£724	0	0
Judge & Eames	704	10	0
Andrews & Sons	698	10	0
C. Brightman	633	0	0
A. W. Chadwick	628	0	0
T. Bonnett	602	0	0

[All of Watford.]

WATFORD (Herts).—For alterations and additions to Ashwellthorpe, Clarendon-road, for Mr. F. Knyvett. Mr. C. P. Ayres, architect:—

A. W. Chadwick, Watford	£771	0	0

WESTMINSTER.—For rebuilding the Two Brewers public-house, James-street, Buckingham-gate, for Mr. Samuel Raven. Quantities by Mr. Fredk. Thomson. Mr. H. I. Newton, architect, Queen Anne's-gate:—

Heath	£3,800	0	0
Cook	2,790	0	0
Haylock	2,712	0	0
Spencer & Co.	2,684	0	0
Lamble	2,657	0	0
Chappell & Co.	2,614	0	0
Walker	2,538	0	0
Godden	2,300	0	0
Steel Bros.	2,295	0	0
Burman & Sons,* Kennington Park	2,275	0	0

* Accepted.

WINCHFIELD.—For repairs and exterior painting at the Hartley Wintney Workhouse. Mr. W. H. Turner, architect:—

J. A. Sims, Basingstoke	£285	0	0
Liming Bros., Farnham	272	0	0
H. Martin, Hartley-row (accepted)	193	0	0

[Architect's estimate, 195*l.*]

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